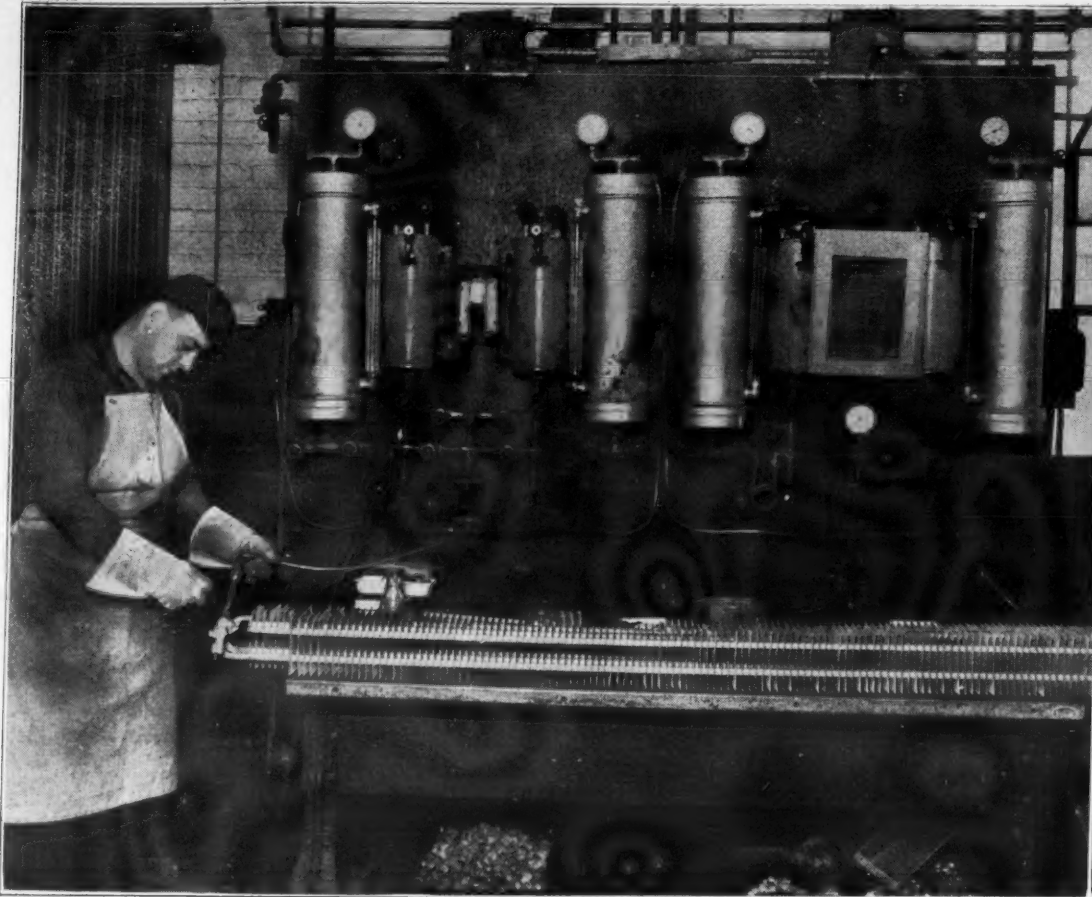
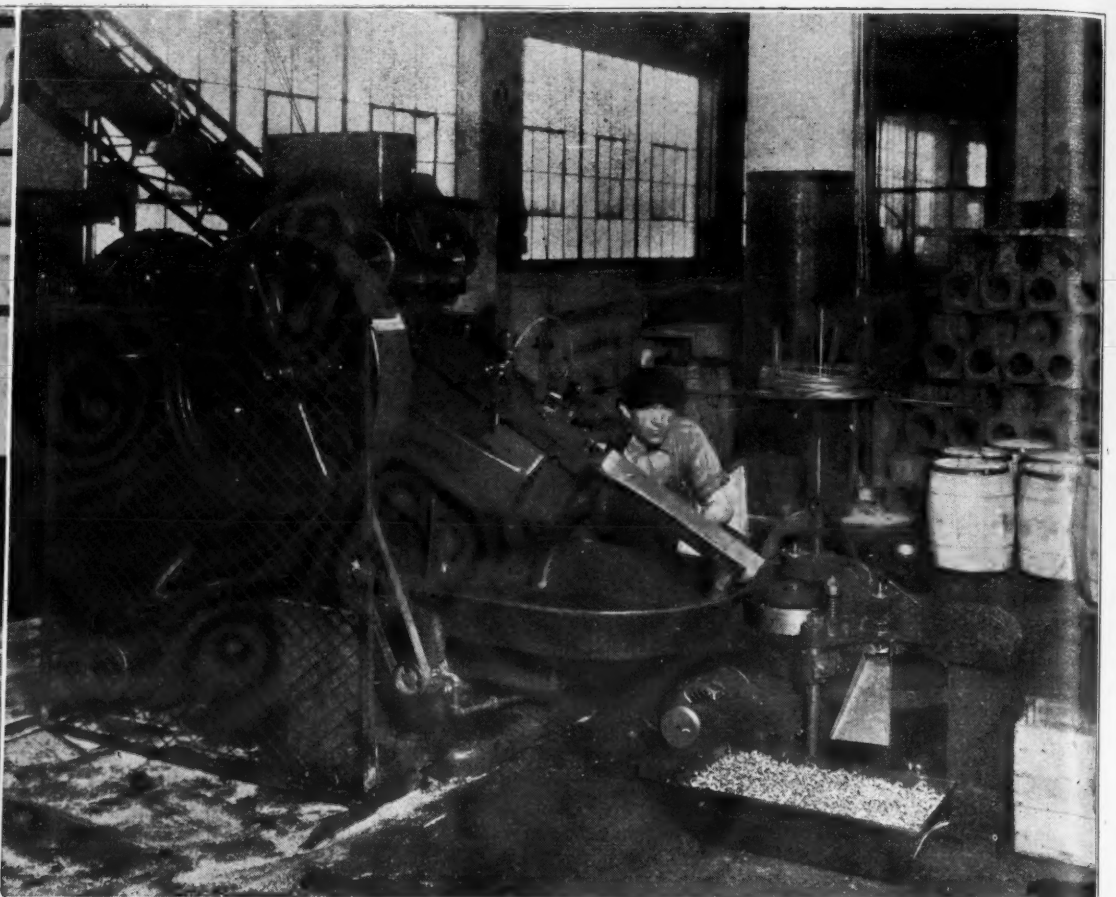


New Production Equipment at Kelvinator Plant



A commercial coil is being charged with sulphur dioxide and tested with ammonia fumes for leaks, at this testing fixture in the Kelvinator factory.



This Waterbury-Ferrell machine threads 48,000 shelf hooks a day for cabinet compartments. It is used in conjunction with an automatic bending machine.

COPELAND OFFICIAL PREDICTS DINING ROOM COOLING

DETROIT—Refrigeration in clubs, restaurants, and hotels was discussed by W. D. McElhinny, vice president in charge of sales of Copeland Sales Co., at a dinner meeting of the Club Managers Association of America, April 6, at the Detroit Yacht Club.

Not only food preservation practices, but the cooling of dining rooms of these institutions was described. "Owners of eating places have found that there is a heavy loss of business in hot weather

because the heat takes away the appetite of people," Mr. McElhinny said.

"They do not feel like eating when they are almost suffocated with the heat. Persons coming in from the intense heat of the streets into a comfortably cooled room feel an immediate relief. Their appetites are stimulated, and they enjoy a hearty meal.

"This naturally results in a substantial increase of business for institutions serving food. They are finding it profitable to cool their dining rooms, and in a few years every first class eating house will be artificially cooled in hot weather," he concluded.

LITERATURE OF MANUFACTURERS

Catalogues, bulletins and other material recently issued.

Manufacturers are requested to send copies of new trade literature to Electric Refrigeration News.

G-E Gluepots

Electrically heated pots for heating glue are described in bulletin GEA-193A just issued by the General Electric Co., Schenectady, N. Y. The gluepots are furnished in two types, distinguished by their method of heating the glue. The jacketless type heats by direct thermal contact with the walls of the pot, while the water-jacketed unit utilizes water as an intermediate conductor.

Harshaw Chemical

Basic industrial chemical commodities which the Harshaw Chemical Co. manufactures, imports and sells as agents for other manufacturers, are listed in a 24-page booklet released by that company.

Ice Skating Rinks

The Frick Co. of Waynesboro, Pa. portrays recent methods of making indoor ice skating rink installations in bulletin 198-A. Illustrations show refrigeration equipment and the rinks themselves where skaters may enjoy their winter sports on artificial ice.

Aerovent Fans

A 36-page catalogue just brought out by the Piqua Electric Mfg. Co. of Piqua, Ohio, gives the dimensions, capacities, and performance data of their line of Aerovent fans. Each type of fan is fully described with an explanation of its applications. Pressure-output curves show their performance characteristics.

Niagara Fan Heaters

The construction and operation of Niagara fan heaters are described in bulletins 11, 13, and 14 received from the Niagara Blower Co. of Buffalo, N.Y. Details of the aluminum heating coils are illustrated pictorially, and the specifications and rated output capacities presented in tabular form.

Soundproofing of Buildings

Installations of soundproofing material in large buildings are described in an 11-page pamphlet entitled "Isolation" and published by the Korfund Co., Inc. of New York. The booklet includes several studies of technical problems involved in the soundproofing of buildings, and discussions of methods of solving them in individual cases.

South Bend Lathes

Features of the nine-inch Junior Lathes furnished by the South Bend Lathe Works of South Bend, Ind. are described in a new catalogue of that company. Specifications of various other lathes are given, and a number of uses explained. Various chucks, tools, and accessories for the junior lathes are also illustrated.

TALIAFERRO DESCRIBES USE OF PSYCHOMETRIC CHART

PHILADELPHIA—Air conditioning and electric motors were discussed in the monthly meeting of the Philadelphia section of the A. S. R. E., held here.

B. Ryland Taliaferro, of the Carrier Engineering Corp., was the first speaker, discussing many phases of air cooling, insulation controls, and instruments. He used the psychometric chart as his subject, showing how to use it with concrete examples. He advocated the low temperature range of the psy-

chrometric chart for direct solution of cold storage problems.

George E. Swift, head of the Philadelphia branch of the Electric Machinery Manufacturing Co., spoke next, tracing the history of the compressor motor with the aid of a number of slides.

He described a new automatic unloader for synchronous motors, which equalizes the high and low pressures at the compressor with the slightest drop in voltage, simultaneously starting up the exciter to pull the motor back to speed.

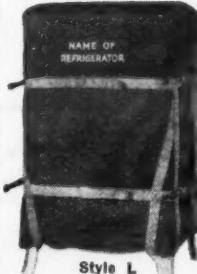
David L. Fiske, national secretary, was a guest of the section.

REFRIGERATION RUBBER WARE

Door and Frame Insulating Strips. Gliders for Refrigerator Legs. Top Hole Sections, Lid Collars, Sleeves, Brine Hole Stoppers for Ice Cream Cabinets, etc. Specializing in Parts Made to Customer's Design.

THE AETNA RUBBER CO.
ASHTABULA, OHIO

Mastercraft Refrigerator Pad and Carrying Harness



Style L

Made for all makes, models and sizes of automatic refrigerators. One size of both pad and harness takes care of many sizes of refrigerators. Illustration shows style L harness adjustable for refrigerators with legs. For models without legs see our style P. The most sturdy, simple and inexpensive unit made. Adopted by the leading manufacturers. Make of refrigerator lettered in brilliant design. Write for special booklet.

BEARSE MANUFACTURING CO.
3815-3825 CORTLAND STREET, CHICAGO, ILLINOIS

DRINKING WATER FAUCETS

Refrigerators—Water Coolers
New model now available for use on city water pressure



CORDLEY & HAYES

147 Hudson Street New York City

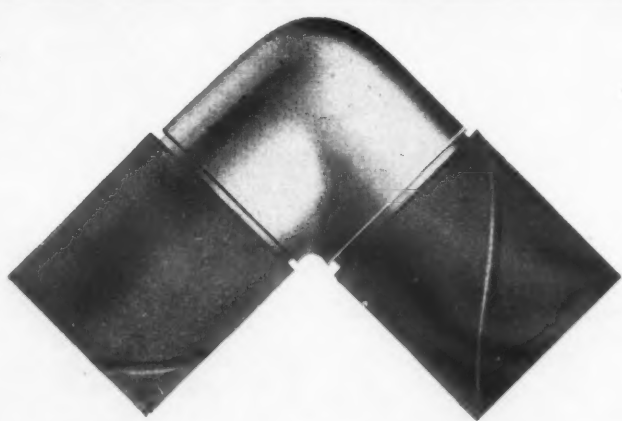
Fulco REFRIGERATOR COVERS



Insure deliveries without scratches or broken enamel. Write our nearest plant today for prices, giving dimensions of your boxes. We also make Dust Covers.

Fulton Bag & Cotton Mills

Manufacturers Since 1870
Atlanta St. Louis Dallas
Minneapolis Brooklyn New Orleans Kansas City, Mo.



FERRULED FITTINGS BUILT RIGHT—TO STAY TIGHT

In making fittings for use in automatic refrigeration, the prime requisite is "seepage and leakage proof."

Seepage-proof fittings, as made by Commonwealth Brass Corporation, are fabricated from hot forged brass and extruded brass rod, and are close granular structure throughout.

Leakage is prevented by protecting every tube seat with a female in shipping, ensuring the seat against nicking, maring and scoring.

This feature of Commonwealth practice costs money, of course, but the satisfaction of knowing that every tube seat is tight is worth many times the cost of protection.

Commonwealth fittings are made by specialists in this industry with 19 years of "knowing-how" back of them.

Send for Catalog No. 36, descriptive of the most complete line of fittings fabricated.

COMMONWEALTH
BRASS CORPORATION
COMMONWEALTH AT G. T. R. R.
DETROIT

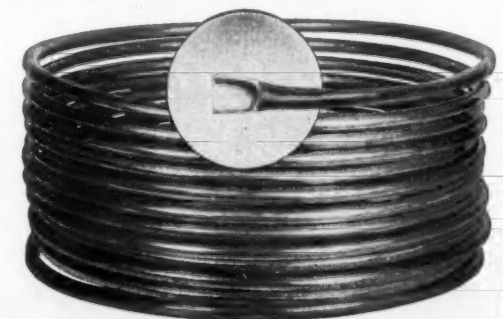
The Ideal Water Cooler Tubing

"Wolverine Electro-Tin-Plated"

(Coated with Pure Tin)

DEHYDRATED and SEALED

Delivered in straight lengths up to 20 feet—or coils of greater length—or fabricated exactly to your specifications—dehydrated and sealed as required—electro-plated with pure tin. It is free from scale, moisture and defect—made to A.S.T.M. Specification B-63-30T.



Immediate Service

Guaranteed Satisfaction

WOLVERINE TUBE CO.

SEAMLESS COPPER BRASS & ALUMINUM

1491 Central Ave.

Detroit, Mich.

Phone Cedar 5000

Export Department—H. M. Robins Company,
120 Madison Avenue, Detroit, U. S. A.
Cable Address: Robins, Detroit

Sales offices in all major cities. Stock available at Los Angeles, 224 E. 11th St. Write or wire for name of nearest representative.

ELECTRIC REFRIGERATION NEWS

Registered U. S. Patent Office.

The business newspaper of the refrigeration industry

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DETROIT, MICHIGAN, MAY 6, 1931

Entered as second class matter
Aug. 1, 1927, at Detroit, Mich.FIFTEEN CENTS PER COPY
TWO DOLLARS PER YEAR

NEW HIGH RECORDS MADE BY SERVEL, G. E., KELVINATOR IN APRIL

KELVINATOR CORP.
PRODUCES 23,087
UNITS IN APRILShipments of Ice Cream
Cabinets Show Gain
Of 10 Per Cent

DETROIT—The biggest April in its history is reported by Kelvinator Corp. Shipments of 23,087 units were made in this month, which is an increase of 41.8 per cent over the 16,277 units shipped in April, 1930.

E. R. Kelley, manager of the ice cream cabinet division, states that April shipments were more than 10 per cent greater than in any previous April in Kelvinator-Nizer history.

Profits for the quarter ended March 31, 1931, were \$352,749, or 30 cents per share, as compared with \$883,558.16 for the same period of 1930. Commenting on these figures, G. W. Mason, president, states:

"While business got away to an unprecedented slow start this year, current business is very gratifying, and present volume indicates that the June quarter will show an improvement over the preceding year in unit shipments."

"Shipments for April of 23,087 are in excess of the final schedule, which was

(Concluded on Page 2, Column 1)

STARR RAISES ANTE
ON LONG GUARANTEE

RICHMOND, Ind.—(Special Wire to ELECTRIC REFRIGERATION NEWS)—A three and one-half year guarantee has been announced by the Starr Co., manufacturers of the "Starr Freeze" electric refrigerator.

This covers both the cabinet and the machine, according to H. J. Wiggins of the refrigerator division of the company. The warranty applies to all domestic models of the "Starr Freeze" line. Service adjustments will be made by the dealer in the field.

MOHAWK REFRIGERATOR
MODELS NOW ON MARKET

NORTH TONAWANDA, N. Y.—Music stores which have been merchandising Wurlitzer organs, musical instruments, and Lyric radios, will now have a Wurlitzer-sponsored electric refrigerator to sell.

Mohawk electric refrigerators, assembled in North Tonawanda by the All American Mohawk Co. (which manufactures Lyric radios and Wurlitzer organs) have just been placed on the market to be sold through all Wurlitzer outlets.

Reciprocating, belt-drive Absopure compressors, employing 1/6 hp. Wagner

(Concluded on Page 4, Column 4)

TRUPAR LAUNCHES NATIONAL
ADVERTISING CAMPAIGN

DAYTON, Ohio—The spring selling plan for Mayflower electric refrigeration includes a series of national advertisements in the *Saturday Evening Post*, *Times* and *Better Homes and Gardens*.

Period design will be emphasized throughout the national campaign, as well as on the radio, in the newspapers and on 24-sheet posters.

DRY-ZERO SALES FOR APRIL
GREATEST IN HISTORY

CHICAGO—March sales of Dry-Zero were the largest in the history of the company, states Raymond Ring, advertising manager of Dry-Zero Corp. here, and sales during April exceeded the March figure by 25 per cent.

Universal Cooler
Buys Absopure
Company

DETROIT—All the physical assets of the Absopure Refrigeration Corp. have been purchased by the Universal Cooler Corp. G. M. Johnston, president of Universal Cooler, states that his company intends to continue the production and sales of the complete Absopure line, and that a new company is being formed for this purpose.

Eventually the entire operation will be carried on in the Universal Cooler plant, according to plans, although the Absopure factory is in full production at the present time filling orders on hand, Mr. Johnston says.

More Universal Cooler units were shipped during the fiscal six months from Oct. 1 through March, than any other like period in history, according to officials of the company. Deliveries

(Concluded on Page 4, Column 5)

'UTILITIES MUST BE
FAIR,' AVERS KELLY

By George F. Taubeneck

CHICAGO—"There is business enough for us all, if it is carried on in a proper manner," D. F. Kelly, president of the Fair department store, told several hundred assembled members and guests of the Electric Association of Chicago at a luncheon here April 23.

"Public utilities should not be allowed to write merchandising losses off as operating expenses," Kelly declared. "Utilities should so arrange their distribution that merchants shall have an entirely unhampered opportunity of building up a large and growing business in this kind of material at a proper profit, or else we shall expect them gradually to fade out of the business of merchandising."

Kelly has been president of the Fair for the last eight years, previous to which he was associated with Mandel Brothers for 43 years. He is president of the National Retail Dry Goods Association, and chairman of the Electrical Merchandising Joint Committee of that association and the National Electric Light Association.

The speaker was introduced by Samuel Insull, Jr., who averred that the

(Concluded on Page 6, Column 1)

SERVEL REPORTS
SHIPMENTS 158%
OVER 1930 MARKCol. F. E. Smith Predicts
May Sales Will
Top April

EVANSVILLE, Ind.—April was the best month in the history of Servel, Inc. This record was made in spite of the fact that billings for its automotive de-



COL. FRANK E. SMITH

partment (Hercules truck bodies and gas engines) were 75 per cent under the same period for 1930, according to Col. Smith, president.

Orders received during the first 21 working days of April, 1931, show an increase of 158 per cent over orders received

(Concluded on Page 4, Column 4)

NEMA PRODUCTION FIGURES

Figures prepared by the statistical department of the National Electrical Manufacturers' Association, giving total shipments of member companies for all time, are printed on page 12 (back page) of the Engineering Section.

Copeland Orders
Hit New Peak
In April

MT. CLEMENS, Mich.—Copeland Products, Inc. again showed a marked gain in 1931 over the corresponding period of 1930 with unit shipments for April, 1931, 48.19 per cent greater than for the same month in 1930.

This information was contained in a report issued May 5 by Louis Ruthenburg, president of the company.

"Unit shipments for the fiscal period beginning Nov. 1, 1930, and ending April 30, 1931," Mr. Ruthenburg states, "were 50.25 per cent above unit shipments for the corresponding period a year ago."

"To date this has been Copeland's biggest year, with unit shipments in each month of the present fiscal year greater than for any similar month of any previous year."

LEONARD BUSINESS
70% AHEAD OF QUOTA

DETROIT—Following his recent return from a series of dealer meetings at St. Louis, Oklahoma City, Buffalo and Rochester, N. Y., A. H. Jaeger, vice president and sales manager of the Leonard Refrigerator Co., announced that Leonard electric refrigerator sales during the month of April exceeded quota by 70 per cent.

Gathering at St. Louis, April 22, Leonard dealers operating under the F. Tiemann Store and Hardware Co., distributor, heard officials of the Detroit company outline sales and advertising plans for the spring months.

A. H. Jaeger headed the convention party, which had as its members, A. M. Taylor, director of advertising and sales promotion; C. M. Armstrong and S. E. Meyers, both of the Refrigeration Discount Corp., and W. W. Garrison, vice president of the McJunkin Advertising Co.

At Oklahoma City, the Leonard troupe stopped over, April 21 and spoke to the 150 dealers of the Harbour-Longmire Co., distributor in the western Oklahoma territory.

Two meetings were held in the territory of H. B. Alderman Co., Inc., western New York distributor, one April 16 at Rochester, and the other April 17 at Buffalo.

G. E. SALES BREAK
ALL-TIME MARK;
1,400 CARLOADSCole, Cooper and Other
Distributors Have
Best Month

CLEVELAND—April, which marked the manufacture of the millionth G. E. refrigerator, broke all-time records for General Electric refrigeration sales when 1,400 carloads of "monitor top" products were shipped to distributors, reports P. B. Zimmerman, manager of the General Electric refrigeration department.

In New York City, Rex Cole did the greatest retail business since the inception of his distributing organization. R. Cooper, Jr., in Chicago, also recorded the biggest month's sales volume his company had ever known.

Other G. E. refrigerator distributors who report that April was the best month in their respective histories include E. H. Schaefer Co. of Milwaukee; A. S. Dunning, Inc., of Duluth; Cope Bros. of Memphis; O'Bannon Bros. of Little

(Concluded on Page 4, Column 5)

MAYFLOWER ADOPTS
3-YEAR WARRANTY

DAYTON, Ohio—Mayflower refrigerators are now sold with a three-year guarantee. The porcelain models E-52, E-62, E-72, and E-82 are guaranteed to be free from defects in material and workmanship during three years of normal use and service by original purchasers.

A like three-year guarantee applies to the refrigerating machines of the lacquer-finished Mayflower refrigerators and one year warranty to the lacquer-finished cabinets, namely models E-31, E-41, E-51 and E-61.

The following warrant is given with each refrigerator:

"We warrant cabinet and mechanical parts of all porcelain Mayflower Household Electric Refrigerators, models E-52, E-62, E-72, and E-82, to be free from defects in material and workmanship under normal use and service by original purchasers, in that we will, within three years from date of shipment thereof from our factory, replace f.o.b. our

(Concluded on Page 4, Column 4)

PRODUCTION DELAYED ON
GRUNOW REFRIGERATOR

CHICAGO—Production plans for Grunow electric refrigerators will be held in abeyance until Grunow radio and radio-television sets are on the market, according to James J. Davin, director of advertising and sales promotion for the Grunow group.

At the June radio show in Chicago the first of the new Grunow radio sets will be exhibited, Davin states. Refrigerators, and possibly other household appliances, will follow later in the year, he declares.

Chief Engineer M. W. Kenney is now attempting to make a decision between

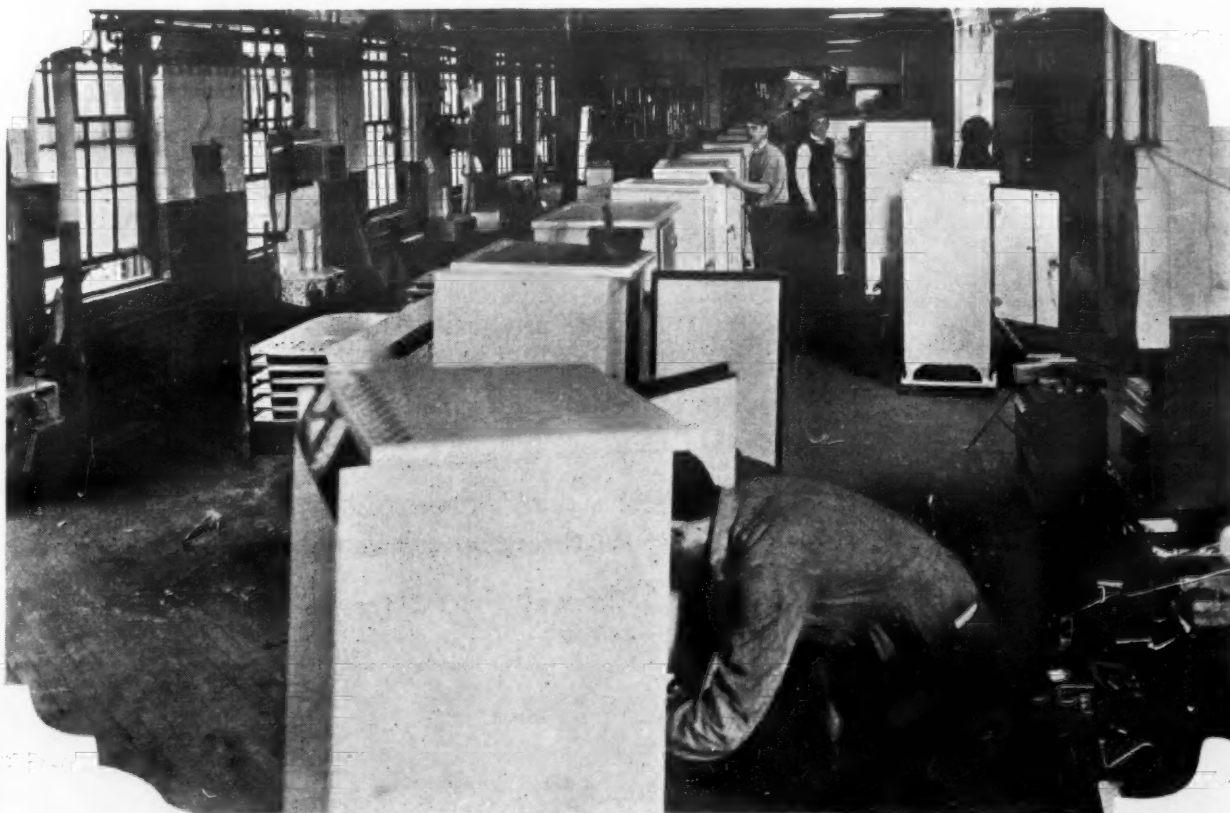
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TACOMA DEALERS ASK CITY TO
QUIT APPLIANCE FIELD

TACOMA, Wash.—Some 300 retail merchants here have filed a protest with city officials, requesting that the City of Tacoma withdraw from the retail electric appliance business and leave this field to the dealers at this time.

Since the City of Tacoma operated its own municipal electric power plant, it has engaged in the sale of electric appliances.

Servel Plant Works Night and Day



In Evansville, Ind., the Servel factory is working night and day to meet increased production schedules.

KELVINATOR REPORTS 23,087 UNIT MONTH

(Concluded from Page 1, Column 1)

increased on April 20th from 18,693 to 21,832 units because of unfilled orders. "The May schedule is set at 21,546 units, and there is indication that this schedule will be made. This compares with 16,335 units for May, 1930.

"Unlike last year, business thus far has not had the benefit of the big campaigns of the company's utility outlets, which are just getting under way, and which will extend into the Summer later than usual.

"Heretofore, the peak sales season has started in March, but this year it began a month later. There is indication that these aggressive sales campaigns on the part of utilities, as well as the Spring activities of the distributors, will result in unit shipments for the June quarter substantially ahead of last year."

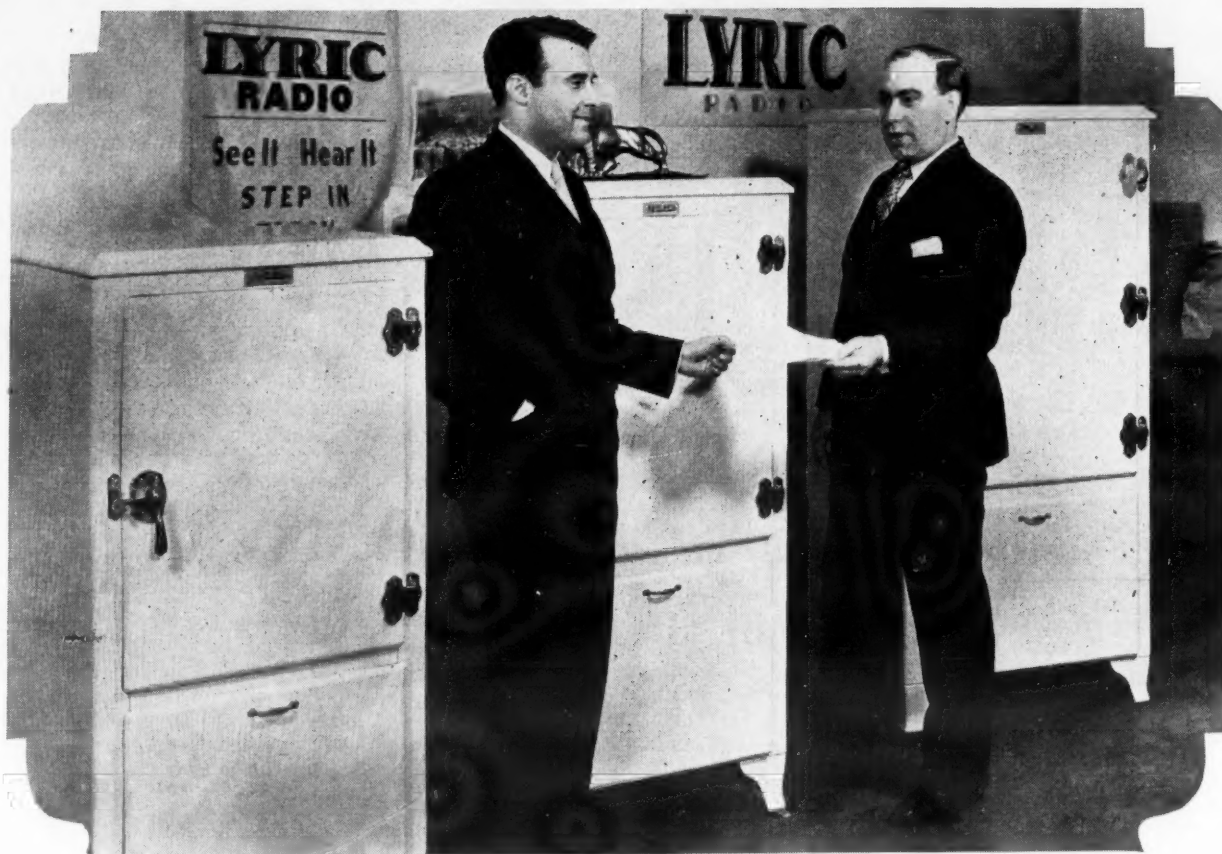
NORGE-CANADA EXPANDS PRODUCTION FACILITIES

TORONTO, Ont.—The Norge Corp. of Canada, Ltd., Canadian subsidiary of the De Forest Crosley interests, has recently moved its factory and offices to the Dodge plant on Dufferin St., from 105 Carlaw Ave., according to D. H. Pollitt, president and general manager, who states that the move was made to meet expansion requirements.

Pollitt reports that the new Dufferin St. plant was chosen because it offered the advantages of modern mass production and permitted the straight-line method of manufacture.

The plant will be devoted exclusively to the manufacture of electric refrigerators. Repairs and alterations are now under way.

Four Carloads of Mohawk Refrigerators Ordered By Chicago Distributor



Eugene R. Farny (left), president of the All-American Mohawk Corp., North Tonawanda, N. Y., accepting an order from Charles P. Cushway, distributor for Lyric radios and Mohawk refrigerators in the Chicago territory, calling for four carloads of the new refrigerators.

CHICAGO CODE SUIT AWAITING DECISION

CHICAGO—The suit brought by six ice manufacturing companies to set aside the Chicago refrigeration ordinance as being "wholly unconstitutional, illegal, and void, not uniform in its provisions, and discriminatory in its character," is still awaiting court action, according to Gerald F. Gearon of the Chicago boiler inspection department.

Gearon who will direct the city's defense against the suit, believes that the bill is meant to embarrass the electric refrigeration industry, as well as to attempt to get lower inspection fees for ice plants.

There is no provision in the Chicago ordinance, the bill discloses, which would require manufacturers of electric refrigerators to produce single unit systems like the sample system for which the general permit is issued, or for cancellation of the general permit in case the manufacturer does not install machines in compliance with this permit.

The bill also points out that as for the requirement that the refrigerant used in single unit systems be designated on the name plate, "said plate might be placed upon the bottom or back of said machine, where it could not be seen by the user thereof."

The bill charges that the ordinance does not provide for the removal or condemnation of existing household systems, saying that "very few, if any, of such systems are installed in accordance with any municipal code.

Approximately 35 persons, partnerships, and corporations are engaged in the business of manufacturing ice in Chicago, and these companies operate 79 ice plants, the complaint records.

For this group of companies, which includes themselves, the plaintiffs seek an injunction restraining the collection of inspection fees, on the grounds that the refrigeration ordinance is "contrary to and in violation of Section 22 of Article 4 of the Constitution of the State of Illinois, and contrary to and in violation of the Fourteenth Amendment to the Constitution of the United States of America."

FOUR UTILITY BILLS ARE UP FOR ACTION

SPRINGFIELD, Ill.—Sponsors of the Barnes bill which would prohibit public utilities from engaging in retail business are making efforts to secure U. S. Senator George W. Norris, of Nebraska, to speak for the bill it was announced today.

Senator Norris is a bitter foe of the so-called power trust, and friends of the bill believe his presence would help their chances. This is assigned as one of the reasons supporters of the measure have made no effort yet to move the bill in committee.

TENNESSEE

NASHVILLE, Tenn.—A bill which would prohibit the sale of merchandise by public utilities is now resting in the archives of the Senate committee on judiciary of the Tennessee legislature. This body, which is now in recess, will reconvene May 25.

The House Bill No. 727 passed only the first reading, according to John F. Green of the Tennessee Legislative Service. The Senate Bill No. 606 passed first and second readings, and was referred to the Committee on Judiciary.

PENNSYLVANIA

HARRISBURG, Pa.—A bill to enjoin public utilities from engaging in the sale of merchandise has not been acted upon since its introduction in the house of the Pennsylvania state legislature, according to the secretary of commonwealth of that state.

TEXAS

AUSTIN, Tex.—House Bill No. 67, which would prohibit public utilities from merchandising, has now passed its second reading, according to Robert Barker, secretary of the senate.

WHITSIT COMPANY SUCCEEDS KELVINATOR-COLUMBUS

COLUMBUS—Entering the refrigeration field May 1, the Perry B. Whitsit Co. has succeeded Kelvinator-Columbus, Inc., as distributor for this territory.

The Whitsit company has been distributor for Victor talking machines for 30 years, and more recently for Victor radios.

Judge Roy Wildermuth, president of Kelvinator-Columbus, is retiring from business.

Read'em and ~~Weep~~ Laugh!

Maximum Insulating Efficiency—The Celotex used to insulate refrigerators is fabricated by special processes that increase its effectiveness to the highest practical point. It more than meets every requirement of refrigeration engineers.

No Heat-Leaking Cracks or Joints—Each insulated area is covered with a single board of Celotex, cut to just the right length, width and thickness. There is no "patchwork" of pieces, full of leaky joints and cracks.

Stronger, More Substantial Cabinets—Celotex reinforces the framework of cabinets, adds lasting structural strength to walls and doors, gives your customers the desired durability. Yet it is so light that it adds little to the weight of the cabinet.

Clean, Odorless, Sanitary—Celotex is made from long, tough fibres of cane that produce its remarkable insulating efficiency. These fibres are carefully sterilized. They are entirely odorless. They are waterproofed to resist absorption of moisture. No insulation could be more sanitary.

The Celotex Company, 919 North Michigan Avenue, Chicago, Illinois. In Canada: Alexander Murray & Co., Ltd., Montreal. Sales distributors throughout the world.

CELOTEX
BRAND
INSULATING CANE BOARD
REFRIGERATOR INSULATION

The word Celotex (Reg. U. S. Pat. Off.) is the trademark of and indicates manufacture by The Celotex Company.

HAVE you been reading the striking national advertisements that feature Celotex Refrigerator Insulation—and give a real selling advantage to the dealers who handle Celotex-insulated refrigerators?

You'll find them in *Good Housekeeping* where pages provide a buying guide for two million housewives—and in the *Literary Digest* with hundreds of readers close to your display rooms.

Watch for these pages! They'll be just as interesting to you as they are to your prospective customers.

It's the first national advertising campaign that has ever been concentrated in the field of refrigerator insulation. Of course, we didn't pack in all the technical reasons why more than 36 leading refrigerator manufacturers have adapted Celotex Refrigerator Insulation.

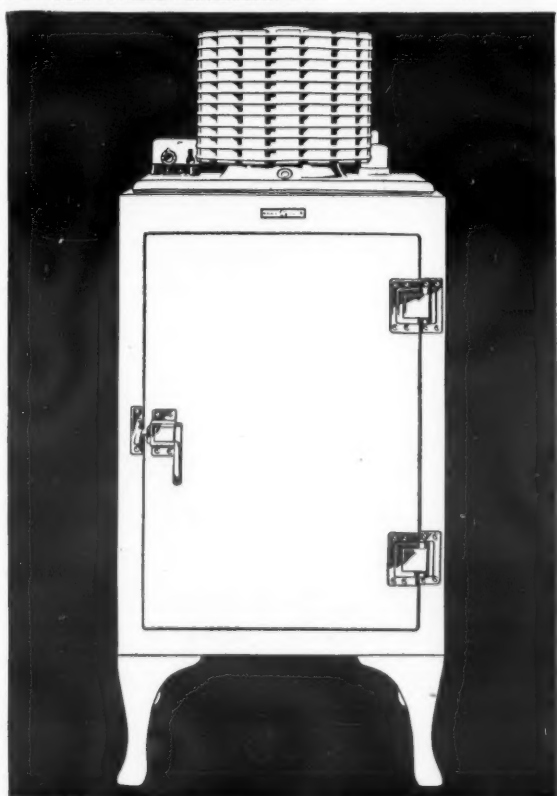
We simply made these advertisements so different, so amusing that they are absolutely sure to be read from beginning to end. We are satisfied to plant in each reader's mind the permanent idea that Celotex is a definite improvement in cabinet construction—an advantage that's worth insisting upon!

The technical facts that prove the superiority of Celotex, we leave to the retail salesman on the floor.

Be sure your men know all the facts—and use them in every sales talk.

A MILLION GENERAL ELECTRIC USERS

... helping to sell another million



NEW SLIDING SHELVES
ACID-RESISTING PORCELAIN INTERIORS
3-YEAR GUARANTEE
NEW LOW PRICES

IN YOUR STATE... in your city... scores of satisfied users of General Electric Refrigerators are selling their friends on General Electric.

♦ Performance has won General Electric a million boosters already! People everywhere are quick to recognize the distinctive beauty of the famous Monitor Top as a symbol of an extra measure of performance... an extra measure of economy... an extra value. Today's refinements give sales an additional impetus... new sliding shelves, porcelain-lined interiors, chromium plated hardware... all at new lowered prices... the lowest in General Electric history!

♦ The story of the Monitor Top... the self-oiled, sealed-in-steel mechanism... is carried into millions of homes by a huge, aggressive advertising campaign. The seeds of careful engineering, of tried and proved performance, are bearing fruit... now... in a sales record that is the envy of the industry. **THE NATION IS GOING GENERAL ELECTRIC**... a million satisfied... enthusiastic... users are helping push General Electric sales quotas over the top!

General Electric Company, Electric Refrigeration Department,
Section DF 51, Hanna Building, 1400 Euclid Avenue, Cleveland, Ohio.



Join us in the General Electric Program, broadcast every Saturday evening, on a nation-wide N. B. C. network.

GENERAL ELECTRIC

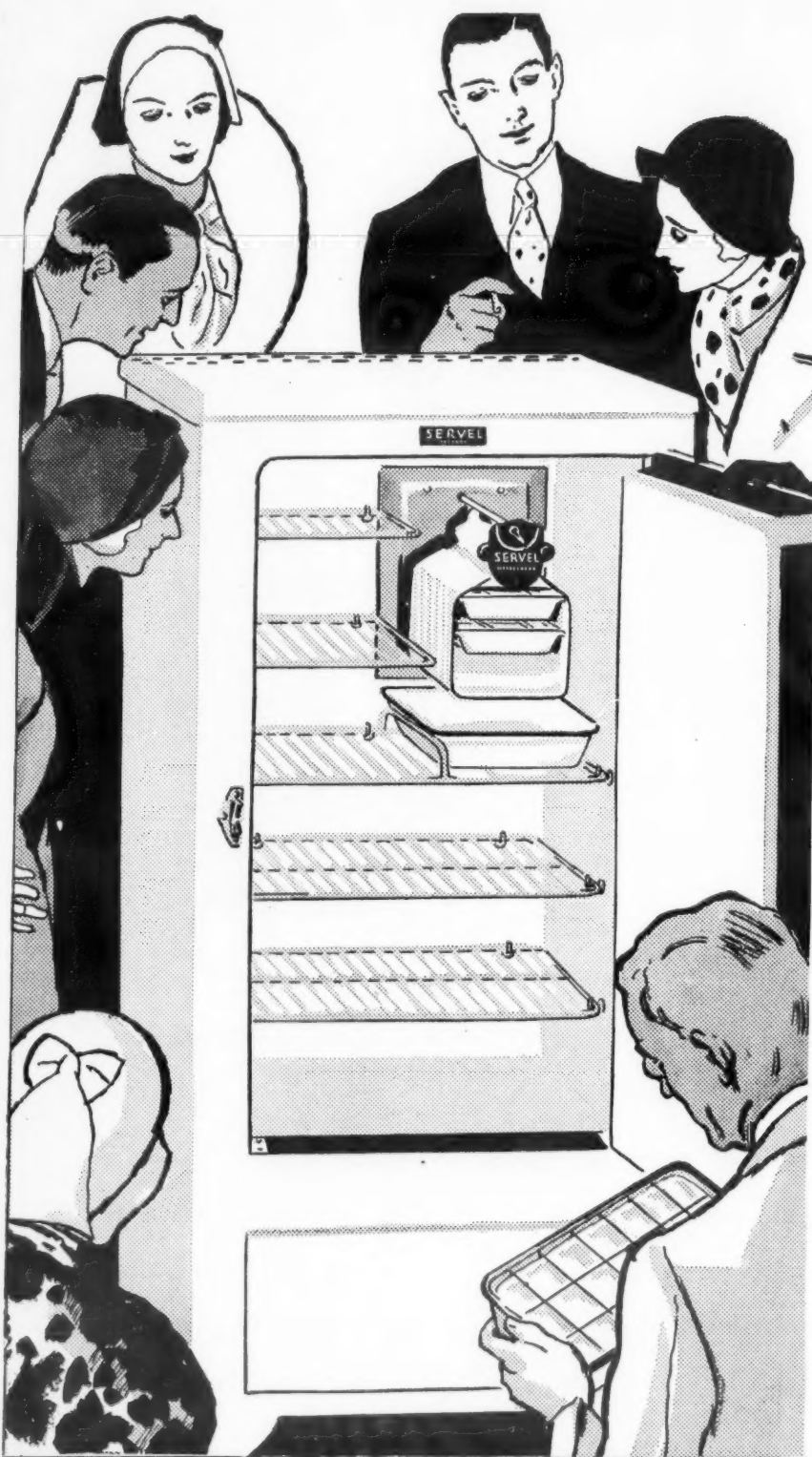
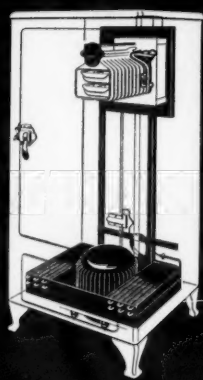
ALL-STEEL REFRIGERATOR

DOMESTIC, APARTMENT HOUSE AND COMMERCIAL REFRIGERATORS — ELECTRIC WATER COOLERS AND MILK COOLERS

Simplified Refrigeration

How we took yesterday's risks out of your business

Phantom view of the simplified working unit



Read the next Servel consumer advertisement in the May 16 Saturday Evening Post

QUICK FACTS

Hermetically sealed unit—No kitchen repairs—No intricate adjustments—No replacement of parts—Fewer moving parts—No moving parts exposed—Costs less to operate—Quietest electric refrigerator—Handy temperature control—More usable shelf space—Beautiful, graceful cabinets—Flat, usable top—no installation problem—Covered by the Servel factory guarantee that protects both customer and dealer.

For years, dealers have struggled under the serious handicap of old-fashioned Service. They have watched their profits being eaten up by the heavy overhead of their Service Departments. They have suffered from the bother of maintaining and managing these departments. They have seen the good will of their customers destroyed by the nuisance of kitchen repairs, intricate adjustments and replacement of parts.

Now all this is ended! The new Servel Hermetic has solved your greatest problem. You can sell electric refrigeration as a merchant—without any need to maintain a repair shop.

The Servel Hermetic is the simplest electric refrigerator ever produced—with fewer moving parts.

The whole working unit is hermetically sealed in a permanent bath of oil—entirely eliminating old-fashioned Service.*

This highly simplified working unit is engineered with the "high pressure side below"—providing considerably more efficient operation and placing the compressor completely out of sight and out of the way. (The flat top provides extra shelf space for the housewife's convenience.)

All moving parts most likely to cause future trouble have been discarded. The Servel Hermetic requires no fans, belts or pulleys—no float valves or expansion valves—no fuses or stuffing box seals.

You can promise your customers "care-free", dependable refrigeration for the fewest possible cents a day. The Servel Hermetic costs considerably less to operate. And it's the quietest electric refrigerator.

Dealers who handle the Servel Hermetic have profit opportunities never possible before. You have a quick market—a tremendous market, limited only by the number of wired homes in your community.

The low prices are within comfortable reach of every income. An outstanding campaign of full-color pages in the Saturday Evening Post directs scores of interested prospects to your display.

Write immediately for full details of our attractive Dealer Plan!

SERVEL SALES INC., EVANSVILLE, INDIANA
A COMPLETE LINE OF HOUSEHOLD AND COMMERCIAL REFRIGERATORS

*If repairs should ever be necessary, simply replace the unit (a simple, one-man job that requires no tools or equipment except a screw driver) and ship the inoperative one to the factory at Evansville for prompt repairs.

Servel Operating Plant at Capacity

(Concluded from Page 1, Column 3)
ceived during the same period of 1930. Billings for March, 1931, show an increase of 62 per cent over the corresponding period of 1930.

This percentage increase does not include any orders carried from March or April, nor does it include orders received for several thousand refrigerators scheduled for shipment in May, according to Vice President F. P. Nehrbaas.

Three thousand employees are now working in day and night shifts in the Servel plant here to meet a stepped-up production schedule.

This increased activity is largely due to the production demands of the new Servel Hermetic, three models of which were introduced last Fall, officials declared. Two new models are now in production, a 7 cu. ft. job which will retail for \$325, and a 9 cu. ft. box which will retail for \$395 (prices quoted on machines installed in most sections of the United States).

"We estimate that the company's business during May will break all former records, including those established this year," declares Col. Smith.

Particularly outstanding jobs on the merchandising of Servel Hermetics are being done by distributors in Philadelphia, Boston, Seattle, San Francisco, Pittsburgh, St. Louis, Des Moines, and Jacksonville, Servel officials state.

In Philadelphia the Schaffhauser-Kiley Corp. is distributing the Servel line, and has established dealers from Wilmington, Del., to Camden, N. J. Led by the Rex Appliance Co., the Quaker City has a large number of Servel retail outlets.

In Pittsburgh the Essenbee Co. has been similarly aggressive.

Northeastern Radio, Inc., of Boston, which is distributing Servel electric refrigeration in the New England states, is also among the leading sales organizations in the Servel fold.

Central States Distributors, Inc., of St. Louis, an exclusive Servel organization, is making progress of an eminently satisfactory nature, say Servel executives.

All through Iowa, and in parts of Illinois and South Dakota, Servel refrigeration is being distributed by A. A. Schneiderhahn of Des Moines in exemplary fashion, according to Servel officials.

Other good merchandising jobs are being done by the A. R. Curtis Co. in San Francisco and Los Angeles, by the Cair Radio Co. of Jacksonville in Florida and southern Georgia, and by Harper-Meggee, Inc., of Seattle.

Distributors for the Servel Hermetic line have been set up in 66 key cities.

ALL-AMERICAN MOHAWK CO. MARKETS FIVE MODELS

(Concluded from Page 1, Column 1)
motors, are being used in all models. Methyl chloride is the refrigerant.

Five models comprise the Mohawk: model 5, net capacity, 4.6 cu. ft., model 10, net capacity, 5.0 cu. ft., model 15, net capacity, 7.6 cu. ft., model 20, net capacity 5.6 cu. ft., model 25, net capacity, 5.8 cu. ft.

Models 5, 10 and 15 are lined with white porcelain and finished with Duco on the exterior. Model 5 has two large ice cube trays, freezing 28 cubes to each tray, or a total of 56 cubes at each freezing. Model 10 has three cube trays, and freezes 84 large cubes at each freezing. Model 15 has four cube trays, and freezes 112 cubes at each freezing.

Model 5 has two inches of insulation, while models 10 and 15 have 3 inches of insulation, all using Balsam Wool. De Luxe models 20 and 25 have two doors. Model 20 has three ice cube trays, 28 full size cubes to each tray, is porcelain interior and exterior, has a fruit tray and chill tray, and is designed with a narrow left door and a wide right door. All models have broom-high legs.

Model 25 is porcelain interior and exterior, has an interior light which switches on and off with the action of the doors, has chill tray and fruit tray, four ice cube trays, 28 full size cubes to each tray, chromium plated hardware, and broom-high legs.

TRUPAR CO. ANNOUNCES THREE-YEAR GUARANTEE

(Concluded from Page 1, Column 5)
factory, without cost to the user, any part thereof which our inspection proves to be thus defective.

"A like three-year warranty applies to all mechanical parts of lacquer-finished Mayflower Household Electric Refrigerators, models E-21, E-41, E-51, and E-61, and a like one-year warranty as to the cabinets of those models.

"This warranty does not apply to any part which has been subject to misuse, neglect or accident; it is in lieu of all other liabilities or warranties, expressed or implied; and we do not authorize any person or representative to assume any such other liability in connection with these products."

KELVINATOR CHANGES PHILADELPHIA SETUP

PHILADELPHIA — Domestic and commercial selling operations of the Kelvinator branch in this city have been taken over by the Homer C. Davis Co. and the Philadelphia Electric Co.

Under the present setup, the Davis Co. will handle the domestic business, while the Philadelphia Elec. Co. will take over the sale of commercial refrigeration.



Homer C. Davis

Heading the domestic distributorship in the metropolitan area is Homer C. Davis, president of the company. George L. Davis, his father, is vice president and treasurer, and A. L. Swengel, who is secretary, also serves as wholesale manager.

Fred J. Foersterling, former branch manager, remains in the territory as Kelvinator district manager.

A. L. Sherman of the Philadelphia Elec. Co. is in charge of commercial refrigeration sales.

G. E. SALES DURING APRIL BREAK ALL-TIME MARK

(Concluded from Page 1, Column 5)
Rock, and Warde B. Stringham Co. of Des Moines.

Breckenridge, Inc., Springfield, Mass.; Modern Home Utilities, Inc., Waterbury, Conn., and Wright Bros, San Antonio, Tex., report record-breaking sales. Breckenridge dealers exceeded the month's quota in less than three weeks, while George T. Bauder, distributor in San Diego, Calif., sold his month's quota in the first 10 days of April.

UNIVERSAL COOLER BUYS ABSOPURE OF DETROIT

(Concluded from Page 1, Column 2)
during the month of April were greater than any other month, they say.

Harold L. Schaefer, Minneapolis distributor, who has just opened a new showroom at 1612 Harmon Place, has been taking a carload a week, J. W. Taylor, vice president reports. Each carload includes a total of 85 machines. The Schaefer organization is a former Chrysler distributor, he states, and many of the 60 Schaefer dealers near Minneapolis have also been former automobile dealers.

Three new distributors were named by Mr. Taylor, W. H. Smith Co. at 1350 East Sixth St., Los Angeles; R. J. Funkhouser Co., electrical supply house of Hagerstown, Md.; and the Nottley Refrigeration Co. of Port Huron, Mich.

WESTINGHOUSE REELECTS MERRICK

EAST PITTSBURGH, Pa.—F. A. Merrick was reelected president of the Westinghouse Electric and Mfg. Co. at a meeting of the board of directors held April 29.

A. W. Robertson was elected chairman of the board; J. S. Tritle, vice president in charge of manufacturing; S. M. Kintner, vice president in charge of engineering; W. S. Rugg, vice president in charge of sales.

L. A. Osborne, H. P. Davis, H. D. Shute, J. S. Bennett, H. T. Herr, Walter Cary, T. P. Gaylord, and Harold Smith were reelected vice presidents.

C. H. Terry was elected an honorary vice president. E. M. Herr was reelected vice chairman.

GRUNOW DELAYS PRODUCTION

(Concluded from Page 1, Column 5)
designs of two refrigerating machines which have been submitted to him.

J. Siegenthaler, H. B. Lawton, D. J. Phelps, C. J. Ely, S. P. LeMonier, and W. S. Sims, all of whom were formerly connected with the engineering staff of Grigsby-Grunow Co., have recently begun working in the Grunow laboratory.

The New SERVEL Hermetic

SIMPLEST ELECTRIC REFRIGERATOR EVER PRODUCED



A GAIN, Kelvinator has established a new record.

April shipments of domestic units exceeded by 41.3% the best record of *any* month in Kelvinator's *entire* 17-year history. Shipments for the month totalled 23087 units. The close of business on April 30 found the factory with virtually double the number of unfilled orders on the books as on the same date a year ago.

All this is proof of the desire—and ability—of the public to buy electric refrigeration. And of the public's appreciation of Kelvinator values. So production schedules

for May and June are being set up to anticipate the breaking of additional records in those months.

Kelvinator distributors and dealers are finding new opportunities for profit through their application of the guiding principle upon which they and the Kelvinator management agreed at the beginning of the year—a principle summed up in three words, "Full Speed Ahead".

Kelvinator Corporation, 14245 Plymouth Road, Detroit, Mich.

Kelvinator of Canada, Ltd., London, Ontario

Kelvinator Limited, London, England

Kelvinator



C O U P O N

KELVINATOR CORPORATION
14245 Plymouth Road, Detroit, Michigan

Gentlemen: Please send information regarding the Kelvinator Agreement.

Name _____

Street Address _____

City _____ State _____

Public Utilities Should Fade Out Of Merchandising Picture, Says Kelly

(Concluded from Page 1)

Electric Association of Chicago is nobody's party, and yet is everybody's party, and is conducted for the welfare of the entire electrical industry.

"Merchandising is a timely subject," Insull said. "The last depression came because of difficulties in distribution, not in production."

Seated at the speakers' table were: Philip R. Clark, Central Trust Co. of Illinois; E. J. Doyle, Commonwealth Edison Co.; Clement Studebaker, Jr., Illinois Power & Light Corp.; Howard W. Fenton, Harris Trust & Savings Bank; George B. Everitt, Montgomery Ward & Co.; J. E. Gorman, Chicago, Rock Island & Pacific Railway Co.; James Simpson, Marshall Field & Co.; Samuel Insull, Jr., Midland United Corp.; D. F. Kelly, The Fair; James B. McDougal, Federal Reserve Bank; Gen. R. E. Wood, Sears Roebuck Co.; L. A. Downs, Illinois Central System; John T. Pirie, Carson Pirie Scott & Co.; Britton I. Budd, Public Service Co. of Northern Illinois; Col. Robert Isham Randolph, Chicago Association of Commerce; John W. O'Leary, National Bank of Republic.

Kelly began with a series of tributes to other well known Chicago merchandisers present at the banquet.

The remainder of his speech follows: "Before addressing myself to the subject assigned me, I wish to take the liberty of recalling an incident that happened about 40 years ago; an incident which had much to do with shaping my career.

"It will be necessary for me now to state publicly that which I have frequently said in private concerning Chicago's foremost citizen—Mr. Samuel Insull. Because of the presence here of the worthy son of an illustrious father,

I am somewhat hesitant to speak of him as I should like.

"However, it may be my only opportunity, and I am going to tell those connected with the craft in which he is so vitally interested of an effort which he made to secure business for his company in a manner that best illustrates the capacity and determination of the man.

"My first contact with Mr. Samuel Insull occurred shortly after he was made president of what was then known as The Chicago Edison Co. Mr. John Gilchrist, his associate for these many years, was at that time sales manager for the Chicago Edison Co.

"I was a youngster, and had just been made superintendent of Mandel Brothers, who were at that time remodeling an old building and its electric light plant.

"John and I conferred day after day in an effort to reach an agreement. I endeavored to persuade him to furnish me with electric light and power and to take care of the boilers that would be used for heating purposes.

"I might say, in passing, that Mr. Gilchrist is one of the best salesmen I ever met. He wished us to install electric elevators. The only ones we knew of at that time were made by the Smith-Hill Elevator Co. of Peoria.

"We were unable to reach an agreement; so Mr. Insull came with John to my cubby-hole of an office in Mandel Brothers' store. I have yet to hear a more capable presentation of any proposition than that put to me by Mr. Insull.

"After I explained to him what I believed it would cost us to operate the plan and offered to pay him \$32,000 annually for the service, he told me it was impossible; that the service could not be furnished at a profit at anything like

the price suggested. It is my recollection he stipulated \$40,000 as a fair price.

"We were unable to get together, however, and Mandel Brothers continued to operate their own plant. They installed high-duty hydraulic elevators and made such improvements in boilers, generators, etc., as to warrant the belief that the cost of operations would come well within the amount offered to Mr. Insull.

"Looking back on the incident now, I realize I was pitting my juvenile judgment against that of the executive of The Chicago Edison Co. I well remember how thoroughly hard we all worked to make good the statement that the plant could be operated for the sum named.

"At the end of the year we had accountants prepare a statement of the expense of operations and we found the cost to be less than \$30,000.

"With boy-like enthusiasm I hurried to Mr. Insull's office and showed him the statement. He examined the figures carefully, then said, in a jocular way:

"Kelly, I did not think you could do it; but I commend you heartily for having done a good job."

"Perhaps Mr. Insull did not realize it at the time, but he taught me a lesson by showing me that as head of a large organization, it is necessary to exercise the greatest care in making a decision; that he was unwilling to jeopardize the interests of his stockholders by making what he believed to be an unprofitable contract.

"It has always seemed to me that I owed Mr. Insull a debt of gratitude for the lesson in management which he taught me on that occasion.

"In this regard, I learned something more: He showed me how necessary it is for men in important positions to treat young people with kindness. The incident in question, I am sure, has long passed from Mr. Insull's mind, but I have never forgotten and it has borne fruit a hundred-fold.

"While occasionally we may find some not in full accord with Mr. Insull's

views, yet every citizen in our great city respects his sincerity of purpose and his marvelous ability.

"In June, 1927, I was invited by Mr. Martin Insull to address the convention of the N. E. L. A. at Atlantic City on the question of merchandising. I accepted willingly.

"That there might be no question of my absolute independence as to what I intended to say or the manner in which I intended to say it, I paid my expenses to and from Atlantic City.

"I say this advisedly so that those who have inquired recently as to whether Mr. Insull or his associates have any interest in our business, may understand that they have none.

"After the delivery of my address at the convention in Atlantic City, the convention appointed a committee to represent the N. E. L. A., to meet with a like committee representing the National Retail Dry Goods and other associations.

"After several conferences, the conference adopted a code of ethics to be observed by all parties. I regret to say (and I do not attempt to place the responsibility) that the code died at birth and, so far as I know, was not observed outside of the City of Chicago.

"Consequently, there has been a great deal of criticism relative to the sale of merchandise and electrical appliances by the utility companies—so much so, that I personally assumed the responsibility of again taking the matter up with representatives of the Commonwealth Edison Co. and worked for some months with them in the hope of coming to an understanding.

"Through the good offices of Samuel Insull, Jr., a meeting was arranged of the presidents of the Commonwealth Edison Co., the Peoples Gas Co. and the writer.

"The result was that the Peoples Gas Co. discontinued the sales of all merchandise except items requiring gas in their operation and the Commonwealth Edison Co. discontinued the sale of all classes of merchandise except electrical appliances.

"Following this, several meetings were held in New York between representatives of the N. E. L. A., the N. R. D. G. A., the National Retail Furniture Dealers' Association and the National Hardware Dealers' Association.

Committee Formed

"On February 4th at a meeting of joint committees representing these organizations, The Electrical Merchandising Joint Committee was formed. Mr. G. H. Paine was engaged to act as executive secretary. He has been at work for almost three months gathering information that has to do with the problem.

"As he represents both sides of the controversy and is a man well qualified to make an impartial investigation, we are looking forward with interest to his report. This, we understand, will be submitted to the joint committee at the convention of the N. E. L. A., to be held in Atlantic City in June.

"The Commonwealth Edison Co. may, therefore, be credited with having brought to a head the movement which was started by Mr. Martin Insull in June, 1927.

"Permit me to say at this point that the National Retail Dry Goods Association, of which I have the honor to be president, is in no way connected with the efforts now being made in various parts of the country to have legislation enacted prohibiting the sale of merchandise by the utility companies.

"It is my opinion that we should arrive at a very much more thorough understanding of this entire question, including the present practices and what is of greatest interest to the public to be served and all parties engaged in this service, before we begin to discuss methods of effectively securing the proper rights to those who are best entitled to receive and render this service.

"I say this in all sincerity for the reason that we have been assured time and time again by representatives of utility companies, operating in an ethical manner, that they have no desire to be in the merchandising field.

"They state as their own reason for engaging in it the fact that merchants were not equipped to properly introduce electrical merchandise when these appliances first appeared on the market; consequently, utility companies were compelled to display, sell and service them.

"However, today their use has become so widespread that merchants, especially those in large cities, are capable of selling and servicing such appliances.

Merchants Capable

"Speaking entirely for The Fair—I will say my first concern is that the great American people should be so thoroughly served in this matter of labor and time-saving merchandise that they will all secure the benefits, both of the appliances now on the market and those to be developed in the shortest possible time, as that will be a great factor in the prosperity of the nation, and incidentally in the creating of a great new volume of merchandise sales.

"So soon as it can be demonstrated (and I believe that will be very shortly) that the merchants of the country are capable of and willing to render this service, we shall expect the utilities either to so arrange their distribution that the merchants shall have an en-

COPELAND HOLDING WESTERN MEETINGS

MT. CLEMENS, Mich.—District conventions of Copeland distributors, dealers and salesmen will be held in five cities in California and Texas during May.

The convention at Dallas was held May 4 at 2201 Commerce St., under the auspices of the Dallas-Copeland Co. On May 6 the convention at Houston will be held at the Texas State Hotel and will be in charge of the Rice-Copeland Co.

At San Antonio the convention will be held May 8 at the Plaza Hotel under the direction of the Winerich Motor Sales Co.

The Copeland convention at Los Angeles will be held May 14 and 15 at the Elk's Club and the one at San Francisco will be held May 22 at the Palace Hotel. Both conventions will be conducted by the Thor-Pacific Co.

W. D. McElhinny, vice president in charges of sales of the Copeland Sales Co., will be the principal speaker at each convention.

Mr. McElhinny returned recently from a trip through the South, visiting New Orleans, Birmingham and Atlanta.

tirely unhampered opportunity of building up a large and growing business in this kind of material done at a proper profit, which is what the utilities should want if they do not already want it, or else we shall expect them to gradually fade out of this business of merchandising.

"Matters brought to my attention since assuming the chairmanship of the Electrical Merchandising Joint Committee are most interesting, and, I am sure, not generally known.

"Among these are letters which have been received, setting forth that manufacturers of electrical appliances find the field closed to their products in many states. They are wholly unable to establish either wholesale or retail sales outlets due to the control of the field by utility companies.

"We know that prior to the formation of the Interstate Commerce Commission, the railroads were charged with many sins of commission and omission. You know the condition of railroads today. They are so thoroughly controlled by the government and interfered with by competition that the profits of these great organizations are diminishing rapidly. You are equally well aware of the fact that this country could not have been developed as it has been were it not for the railroads.

"People are so accustomed to the facilities offered by the utility companies that the service is accepted as a matter of course. Were electric light and telephone service discontinued for even a few hours, the result would be chaos.

"I hold no brief for the utility companies, but we must admit if legislation were to hamper their activities and make it impossible to give the services for which they are organized, their losses would be as great as those of the railroads.

"The contention of merchants has always been that there is business enough for all if it is gone after in a legitimate manner. Merchants do not believe the utility companies should be permitted to charge the losses incurred in the operation of their merchandising departments to the cost of operating their plants.

Losing Ventures

"We are also of the opinion that if and when it is shown that by segregating merchandising activities from their other functions, as is done in the state of Wisconsin, the utility companies will welcome the day when they can be relieved of the necessity for operating losing ventures.

"Merchants are trained in their profession just as the electrical engineer is trained in his; they consider themselves better qualified to handle merchandising problems than those of limited selling experience.

"We know of nothing that responds more quickly to the combination of judgment, energy and resolution than does business. We believe if this combination is employed in the attempt to solve the vexatious problems besetting us, it will result in a solution satisfactory to all concerned.

"In opening my remarks, I spoke of Mr. Insull, Sr. I am going to conclude with perhaps some embarrassment to his son, with whom I served as a member of the budget committee of the Governor's Commission on Unemployment and Relief.

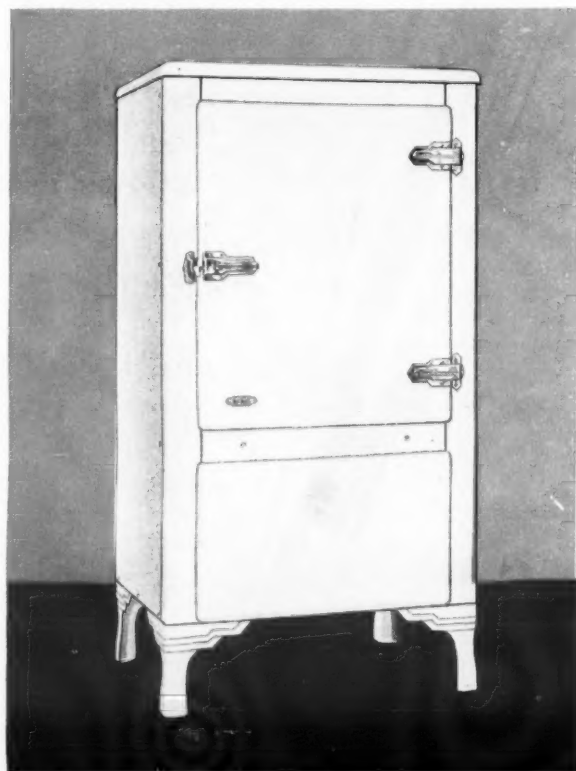
"Notwithstanding the number of distinguished men on that committee, including George F. Getz, Edward L. Ryerson, Britton I. Budd, L. E. Myers, and others, all of whom rendered invaluable service in providing relief for those in need during the past winter, there was none connected with the organization who did as much, as effectively, as our friend Samuel Insull, Jr.

"Like the Prince of Wales, Mr. Insull is a supersalesman. He endears himself to his people. I should like him to know that the people of Chicago—especially the poor of the city, are in his debt."

NORGE in 15,000 Detroit Kitchens ... and only Two Service Men



NORGE ELECTRIC REFRIGERATOR



There are more than 15,000 Norge Electric Refrigerators in use in Detroit, but summer and winter they go on giving such unfailing performance that two service men are actually kept only normally busy taking care of them.

This phenomenal condition exists because of Norge mechanical superiority. The Rollator is a compact, powerful and simple refrigeration mechanism... it's just a roller revolving in a permanent bath of protective oil... it has but three moving parts.

Norge is a time tested refrigerator that has proved itself in world-wide use over a period of six years.

To users it offers complete refrigeration satisfaction and to dealers it offers package merchandise; a short line, service free; small investment and rapid turnover.

A potent advertising and merchandising campaign is now establishing wide-spread

Norge leadership. The Norge franchise is well worth investigating. For details use the coupon.

Manufactured by Norge Corporation, Detroit, a division of Borg-Warner, originators of free wheeling.

NORGE

WITH ROLLATOR

Norge Corporation,
658 East Woodbridge St., Detroit, Mich.
I would like full information on Norge and the Merchandising Plan.

Name.....
Address.....
City..... State.....



The extra boost that makes the sale



Mr. Contractor—

"This refrigerator is insulated with Dry-Zero—the most efficient commercial insulant known."

Professional buyers—as well as housewives and husbands—respect the standard of quality which is implied by the use of Dry-Zero.

Sales Points for refrigerators insulated with

DRY-ZERO

- Permanence of refrigerator efficiency
- Reduced running time of machine
- Economy of operation
- Reduced wear and tear on machine
- Elimination of excessive weight
- Absolute sanitation

DRY-ZERO CORPORATION

Merchandise Mart - Chicago, Illinois

Canadian Office - 465 Parliament Place, Toronto

DRY-ZERO

THE MOST EFFICIENT COMMERCIAL INSULANT KNOWN

MERCHANDISING SECTION ELECTRIC REFRIGERATION NEWS

The Business Newspaper of the Refrigeration Industry

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Editorial Aims of the News

To encourage the development of the art.

To promote ethical practices in the business.

To foster friendly relations throughout the industry.

To provide a clearing house for new methods and ideas.

To broadcast the technical, commercial and personal news of the field.

News Policies

ONE of the privileges connected with editing a business paper is that of hearing all sides of an industry argument. One of the difficulties is that of being properly sympathetic with the sincere views of industry leaders who see entirely different answers to important questions affecting the future welfare and prosperity of the industry. One of the dangers is that of catching the enthusiasm or the fear of a partisan to the extent that the editors start shouting or fighting simply because everyone else is doing so.

ELECTRIC REFRIGERATION NEWS has been given much praise for certain outstanding jobs of reporting. The cases most frequently mentioned are the Frigidaire-Absopure patent trial, the Chicago code battle, and more recently, the Majestic and Grunow activities. It may be said that part of the praise for such work is due to the feeling that the NEWS acted contrary to its own business interests, and therefore deserves credit for fearlessness.

Taking A Stand

On the other hand, there is occasional criticism for the failure of the NEWS to "take a stand" on some question which has the industry all excited. Earnest proponents of various types of equipment and methods of merchandising urge the NEWS to support their various causes. Equally earnest opponents of various policies and practices "view with alarm," and demand that the NEWS fire a broadside.

From the beginning we have endeavored to keep in mind five well defined aims, which were published in the first issue, and which are reprinted at the head of this column. From time to time, as specific questions have arisen, editorial policies have been set forth in detail. Long ago it was decided that it was not the function of this paper to judge the merits of reciprocating vs. rotary compressors, sulphur dioxide vs. methyl chloride, lacquered vs. porcelain cabinets, self-contained vs. multiple systems, or sealed vs. accessible units.

Commercial Experience

It is our belief that the answer to such questions will be determined eventually by commercial experience, if laboratory tests fail to indicate a decisive verdict. It is our conviction that nature, and not editorial brain power, will decide whether 50 degrees or some other temperature represents "the danger line." No conference has been necessary to decide that it is not up to the NEWS to announce to an anxious world who makes the best electric refrigerator.

We have no objection whatever to a free discussion of all of these questions in the NEWS. Manufacturers are more than welcome to debate the

last question until kingdom come—at regular advertising space rates.

Privately, we rather hope that no one company ever wins a decisive victory, for we hope to see developed an industry of such proportions as to justify a large number of substantial companies, actively competing for a fair share of a profitable business.

Installment Selling

ONE of the interesting developments of the recent depression has been the discovery that it apparently had little effect upon installment selling. Figures of large finance companies indicate that repossessions and uncollectable accounts have increased but slightly over normal times. Following the general decline in all merchandise sales, the volume of new business taken in by finance companies was correspondingly lower; but the decrease has not been particularly great, and such concerns are still using their funds to buy installment paper.

According to Milan V. Ayres, analyst of the National Association of Finance Companies, only two finance companies, both of which were small, gone into the hands of receivers since October, 1929. During the same period more than a thousand banks closed their doors.

The extension of time payments on electric refrigerators over long periods is a question that is being debated broadly and heatedly in the industry, especially since public utility merchandising has come under fire. While the merits of very long terms may be subject to considerable inquiry, the ability and consistency of the public in paying undoubtedly has been proved by the record of finance companies during the recent valley in the business curve.

Surprising Fact

This fact has been surprising to many economists, some of whom had publicly doubted the ability of time payment financing to withstand the strain of a protracted general depression. To finance company officials, however, this experience has not been surprising.

"The purchaser's credit is carefully checked," says Edwin C. Vogel, chairman of the Executive Committee, Commercial Investment Trust Corp., "giving due consideration to the moral hazard, his financial position, his earning capacity, if an employee the length of his employment, his residence and all other questions that are deemed pertinent to the determination of his ability, as well as his willingness to pay for the article purchased, and to assure the credit man that he is not purchasing something beyond his means.

"A substantial down payment is required, the amount depending upon the character, use and durability of the article sold, the balance being spread in equal monthly payments which must not be too long. The down payment creates a substantial interest of the purchaser in the article which he will not willingly lose, and this keeps him from undertaking the monthly payments required unless he is sure that he is able to meet them."

Ideally Suited

The "character, use and durability" of the electric refrigerator is such that from the standpoint of the finance company it is ideally suited to time payments. In the first place, it is stationary. Unlike the automobile, it will not be driven out onto a public highway and wrecked. It does not precipitate family quarrels over who is going to use it. It has proved it can withstand fire hazards. All of these considerations make it a good risk for finance companies, and easy terms have been made possible as a result.

Time payment selling having successfully weathered the depression, more and more electric refrigerators are being sold on that basis. Whatever the economic implications of the idea may be, installment selling seems more firmly entrenched than ever.

Letters from Readers

Opinion Has Changed

Marinette, Wis.

Editor:

I have been a subscriber to ELECTRIC REFRIGERATION NEWS for the past three years, read it regularly and have really enjoyed it and have always recommended it to my associate dealers in the refrigeration business, but my opinion of your magazine has changed considerably since your last issue dated April 8. I am enclosing a clipping which I cannot see how it was possible would slip by the observation and checking of the man in charge. It was my thought that ELECTRIC REFRIGERATION NEWS was a magazine published for the benefit of the refrigeration industry and would not publish articles that were detrimental to the industry such as the one mentioned above. I feel sure that the entire Frigidaire organization feels the same way about it as I do, because at a recent meeting, in fact one held about a week later than the date of your last publication, there were quite a few comments on this article.

WM. DUQUAINE,
Duquaine's Automatic
Refrigeration Sales.

Answer: Our purpose is to serve the industry, not to harm it. The progress and prosperity of this publication is so closely related to that of the refrigeration industry, that intelligent self-interest dictates a constructive attitude toward all its problems.

In general, we believe that the best interests of the industry will be served by solving problems, not by suppressing knowledge of them.

Every business has its hazards, and it behooves the management of the business enterprise to be on guard against every potential threat against the continued profitable operation of the business.

The experience of railroads, public utilities, manufacturers, in fact all types of business, indicates that a large section of the public is quick to take advantage of any opportunity to hold a solvent concern liable for any injury—real or fancied. Many a promising business has gone on the rocks because of failure to take sufficient precautions against losses resulting from accidents.

We believe that the NEWS will perform a valuable service to the industry by informing its responsible members regarding the obstacles and pitfalls which may endanger profitable operations. We do not believe that ignorance of such matters will in any way strengthen the industry's position.

On the other hand, we are not alarmists and we are not affected by the nervousness of those who are constantly jumping at strange sounds and shadows.

The electric refrigeration industry is enjoying a remarkable growth. The service is highly popular with the public, the future is exceedingly bright. Steady hands, keen minds and watchful eyes are needed to insure continued prosperity. Suppression of vital information is not in keeping with the requirements.

Evidence of the soundness of our policy will be found in the pages of substantial business publications serving older industries. In such publications much space is devoted to court decisions, and reports of litigation affecting the welfare of the industry. Prosperity invites attack; and this industry should be prepared to meet unjust, as well as fair claims against it.

Editor.

'No Majestic News'

Clarinda, Iowa

Editor:

We have just read your issue of April 22nd and we wish to make this comment: With thousands of dealers interested in the progress of Majestic, we find not a word regarding same in this issue.

Did you know that Majestic is introducing a new model 140, and the photographs are out? Do you know what the production rate is today on the Majestic? Do you only give news on the manufacturers that advertise constantly with you?

IVAN BENEDICT,
Benedict Piano Co.

Answer:

Prominently on the front page of the April 8 issue is a story which not only mentions model 140 (which we announced in our columns last winter), but also announces the Majestic three-year guarantee, its new prices on all models, its service plan, recent changes in design in Majestic refrigerators, the number of unfilled orders on hand, the number of Majestic refrigerators sold before production was resumed late last March, the addition of 2,000 more workmen to the Majestic factory, present and future production schedules, and the announcement that Grigsby-Grunow Co. will eventually be named Majestic Corp.

Editor.

Kind Words Dept.

3957 Verrue Ave.,
Fresno, Calif.

Subscription Dept.

I am in receipt of your letter of April 14th, 1931, stating that the subscription price for the ELECTRIC REFRIGERATION NEWS is \$2.00 instead of \$3.00, the amount of my check to you.

I appreciate this very much and want to add that my wife and I enjoy ELECTRIC REFRIGERATION NEWS exceedingly, and should hate to be without it.

C. R. JOHNSON.

St. Louis, Mo.

Subscription Dept.

You sure deserve congratulations and good wishes on the paper you are sending out now. It may be and probably is a fact that you cannot satisfy everybody, but you sure are coming close to it, with the various articles and sections of ELECTRIC REFRIGERATION NEWS.

I would like to, and hope to in the future, see articles containing information pertaining to heat leakage and usage factors for various cabinets or other application of electric refrigeration in calculating values of load requirements of mechanical or condensing units.

I would like to express appreciation of the good work you are doing and thanks for various services you have extended.

JOHN A. LINK.

Jackson, Miss.

Subscription Dept.

For two months now I have been without the NEWS and feel absolutely lost.

I am enclosing \$2.00 for which you will please enter my subscription at once.

Thank you for getting this next edition of this wonderful journal to me at your earliest convenience.

F. R. LACKFOLD, JR.,
Peoples Furniture Co., Inc.

New Haven, Conn.

Subscription Dept.

Enclosed please find my check for two dollars (\$2.00) for one year subscription to your ELECTRIC REFRIGERATION NEWS starting with your next issue.

I happened to pick up a copy of this publication and thought it was very good to one that is interested in electric refrigeration.

I am in the New Haven Branch of Frigidaire and being in the service department, I find that there is a great deal of information to be gained by reading your paper.

SAMUEL LEVINE,
Indianapolis, Ind.

Subscription Dept.

The writer is listed among your first subscribers, and has always enjoyed ELECTRIC REFRIGERATION NEWS.

T. W. CARRAWAY.

He Saw It On a Street Car

McKeesport, Pa.

Subscription Dept.

Enclosed find \$2.00 for your paper. I saw a man read it on the street car—I got interested in an article in your paper of March 25th issue. I was unable to read it all, but I do want that copy.

M. D. MERCUR.

Bay City, Mich.

Editor:

ELECTRIC REFRIGERATION NEWS cannot be beat for good news on refrigeration.

C. H. EARL,
Refrigeration Service Co.

More News About

I would like to see more news about: Frigidaire—Automatic Utilities, Inc., Marquette, Mich.

Majestic—D. K. Booth, Harlan, Iowa. Kelvinator—H. J. Boome, West Cokesack, N. Y.

Frigidaire—Fleming & Nemitz, Winona, Minn.

Majestic—L. A. Ericksons, Stromsburg, Nebr.

Merchandising—Francis E. Simpson, Helena, Mont.

Selling—Majestic Distributing Corp., Tampa, Fla.

News in the advancements of Frigidaire line.—The New Furniture Co., P. O. Box No. 260, Eagle Pass, Tex.

Electrolux gas refrigerators.—A. H. Ayres, Birmingham, Ala.

Retail sales promotion.—Des Moines Music Co., Inc., Des Moines, Iowa.



A.P. 611

CABINETS BY
Seeger
 SAINT PAUL

Among the best sellers of the 1931 Season is this six cubic foot Cabinet by Seeger. Made in either All Porcelain (Model AP611) or Genuine Lacquer Exterior and Porcelain Interior (Model LP611), Seeger undisputed quality at a reasonable price. To be had without legs, or with 4, 6, 8 or 11 inch legs as required — at slight additional cost.

SEEGER REFRIGERATOR COMPANY
 SAINT PAUL, MINNESOTA

Madison Ave.,
 Between 46th and 47th Sts.
 NEW YORK, N. Y.

655-57 So. La Brea Ave.
 LOS ANGELES, CAL.

Statler Building
 BOSTON, MASS.

660 North Wabash
 CHICAGO, ILL.

"EBCO"

AUTOMATIC SELF-CLOSING STREAM CONTROL VALVES



Save Water.
Eliminate
Squirting.
Control height
of stream—
automatically—
under all fluctuating pressures
between 20 and
120 pounds.

Above—Exposed Type
C-1300

The Ebinger Co.,
pioneered in
developing and
perfecting the
Automatic Stream
Control Valve.

WRITE
FOR
CATALOG "S"

THE D. A. EBINGER SANITARY MFG. CO.
COLUMBUS, OHIO

Manufacturers of EBCO Drinking Fountains,
Ventilated Urinals and Closets, Round Wash
Sinks and Steel Compartments for toilet rooms.

WILLIAMS EXPANDS IN CONNECTICUT AREA

NEW HAVEN, Conn. (U. T. P. S.)—Plymouth Electric Co. recently named distributor for the Williams Ice-O-Matic refrigerator line in Connecticut, Rhode Island, and four counties of Massachusetts, is rapidly expanding its list of dealers and arranging for broad distribution.

A sales school was held April 27 at the New Haven Elks Club which was attended by about 100 dealers from all over the territory. Arthur A. Shank, in charge of sales promotional work for the Williams Co., and Beverly Miles, sales engineer, addressed the gathering.

R. J. Mailhouse, president of the Plymouth Electric Co., was in general charge of the school. Optimistic reports of sales developments and prospects were presented. The company has built up its dealer list to 29, with a number more to be added, according to Louis Yudin, in charge of sales.

Dealers now handling Ice-O-Matic in the Southern New England territory, practically all of whom have been put on during the past few weeks, are as follows:

True Utilities Corp., 181 Ann St., Hartford; Oscar B. Bertilson Co., 3008 Fairfield Ave., Bridgeport; Economy Auto Supply Co., 23-25 Main St., New Britain; Economy Auto Supply Co., Bristol, Conn.; Tri-City Electric Co., 56 Elizabeth St., Derby, Conn.; Johnson & Little, 13 Chestnut St., South Manchester, Conn.; Radio Service Bureau of New Haven, 543 Whalley Ave., New Haven.

Red Wing Oil Heating Co., 17 North Main St., Middletown, Conn.; Suriner & McBreen, 56 Main St., Northampton, Mass.; Winford Goodnow, Shelburne Falls, Mass.; Radio Electric, Chester, Conn.; North Haven Radio & Electric Co., Church St., North Haven, Conn.; Grills Electric & Auto Parts Co., 34

Maher Advertises As He Rides



E. A. Maher, president of E. A. Maher, Inc., Westinghouse regional refrigerator distributor of Hempstead, L. I., tells the world about his product through the medium of his flashy Renault.

West Broad St., Westerly, R. I.; Ball Tire Co., 328 Park St., New Britain, Conn.; Fred A. Flick, 118 Race St., Holyoke, Mass.

W. L. Bacon Co., 514 County St., New Bedford, Mass.; Henry C. Breunig, 41-47 Temple St., New Haven; J. E. Lehotzky, 102 Main St., New Canaan, Conn.

Dupon & Lanouette, 147 Pratt St., Meriden, Conn.; La Valle Electric Co., 57 White St., Danbury, Conn.; Williams Auto Co., 37 Franklin St., Westfield, Mass.

Rischall Electric Co., 7 Pratt St., Meriden, Conn.; Rischall Electric Co., Wallingford, Conn.; Ray Furniture Co., 76 Federal St., Springfield, Mass.; De Lage Radio Sales & Service, Inc., 32 West Putnam Ave., Greenwich, Conn.

Morrow Bros. Garage, 100 Main St., Westerly, R. I.; Louis Croll, 11 Commercial St., New Britain, Conn.; Murphy Bros., Inc., 212 West Ave., Pawtucket, R. I.; Dorner's Music Shop, 38 Oak St., New Haven.

APEX SIGNS TWELVE NEW DEALERS IN CLEVELAND

CLEVELAND — Twelve additional dealers to sell the Apex refrigerator in the metropolitan territory have been appointed by the Apex Electrical Mfg. Co. of this city.

The new dealers are: Conrad-Balsch Kroehle Co., with stores at 7318 Wade Park, 6706 Detroit Ave., and 11220 Superior Ave.; C. P. Davis Hardware Co., 4465 Mayfield; Radio & Electric Shop, 1588 Hayden Ave.; Ohio Furniture Co., 6623 St. Clair Ave.; Kronheim Furniture Co., 2043 E. 55th St., and 5812 Euclid Ave.; F. J. Pekoc, Jr., 11906 Buckeye Rd.; Koch Furniture Service Co., 1269 E. 9th; E. Hollander Furniture Co., 8634 Buckeye Rd.; A. Froelich, 3214 St. Clair Ave.; J. L. Goodman Furniture Co., 8358 Broadway; Euclid Radio Shop, 20183 Euclid Ave.; Crystal Electric Co., 2029 E. 102nd St.

OHIO CO. HITS 1931 QUOTA IN FIRST FOUR MONTHS

COLUMBUS—R. F. Boyland, manager of the Good Housekeeping Shop Co., distributor of Copeland electric refrigerators here, reports that his company has already received from the factory his entire year's quota of Copeland electric refrigerators. This completion of the year's quota in only four months has never been equalled in the history of the company.

The Good Housekeeping Shop Co. sells radios, washing machines as well as other household electric equipment. It is the oldest exclusive electric appliance store in Ohio, and has been in business in Columbus for more than 14 years.

HAYNES TO DIRECT SALES FOR BRIDGEPORT DEALERS

BRIDGEPORT, Conn.—Perry L. Haynes has been named sales manager for the Oscar B. Bertilson Co., 3008 Fairfield Ave., Ice-O-Matic refrigerator dealer.

Mr. Haynes succeeds J. O. Bundy, who recently became sales manager for the New Britain Store Fixture Co., Copeland dealer.

The Bertilson company is now using a weekly radio program to boost Ice-O-Matic refrigerators, broadcasting over Station WICC, Bridgeport.

NEW BEDFORD COMPANY TAKES DEALERSHIP

NEW BEDFORD, Mass.—The Standard Electrical Co. has signed a franchise with Buckley & Scott, of Providence, R. I., distributor, to handle the Kelvinator line. William Berosky, proprietor, has been active in the electrical business for 28 years. His initial order was for 21 Kelvinators and he has been selling an average of about four cabinets a week.

EASTERN CO. HAS RENTAL PLAN FOR WATER COOLERS

PROVIDENCE—A plan, under which G-E water coolers are leased, has stimulated sales for Gentsch & Thompson, Inc., local G-E distributor, according to officials of the company.

Several recent installations include a C-2 cooler in the Union Trust Co., East Greenwich; a D-P-3 cooler in the Union Trust Co., Arctic; a D-B-1 cooler in the E. L. Freeman Co.; a D-B-1 cooler in the What Cheer Printing Co., and a D-B-1 cooler in the offices of the Continental Finance Co.

Under the lease plan, the G-E distributor agrees to install a specific model of water cooler in the offices of the purchaser, the latter to pay \$6.00 a month, in advance, for four years from the date the cooler is installed.

The purchaser is held responsible for any damage done to the cooler; he also agrees not to sell, mortgage, relet or otherwise transfer the cooler from the premises on which the cooler is installed.

If desired, the G-E company will take the cooler out and install it in any other location the purchaser may desire for a charge of \$5.00.

Upon failure to keep up monthly payments, the distributor reserves the right to enter and remove the cooler.

At the end of the four years, if payments have been made as stipulated in the contract, the company renting the use of the cooler becomes owner of it. The lessee may also at any time buy the outstanding interest in the cooler according to an agreement at the time the cooler is installed.

FORTY SALES MADE BY DEALER AT SHOW

READING, Pa.—Forty sales of Copeland refrigerators, including one commercial installation for \$1,500, is the accomplishment of B. O. R. Radio Co., Inc., during the recent Contractors' and Builders' show, which lasted a week.

"When you are in a town with a population of slightly over 110,000," says H. A. Ollivierre, president of B. O. R., "and you can bring your product before half of the people, it is worth some thoughtful planning."

"We exhibited in this space before this year and we knew what to expect. Our location was ideal. Our booth was well laid out and the eye value of our product was brought out with a vivid display of colors."

"Two weeks before the show, we broadcast over the local station. Following this, we mailed admission tickets to a great many of our clients. Each of the salesmen was given a quantity of tickets to hand out to his prospects. People who visited the show without tickets of admission, had to pay 10 cents admission."

"Our booth was the first thing you saw as you came in and the last thing you saw before you went out. We had a large price sign on each refrigerator; one could easily read these signs 50 feet away."

"We had three Copelands provided with sparkling, ice cold grape juice. We passed this out free of charge. We also passed out thousands of novelties to the kiddies. The visitors chatted as they drank, and many of them affixed their names to a Copeland contract."

"We invited our dealers to be at the booth. One of them participated in the booth display, while the others simply attended, and got as many sales as they could."

"We entered the show with the intention of selling at least 50 refrigerators, but considering the contracts that were signed and the promises we received, we feel that at least 75 Copelands will result directly from the 1931 Building Show."

"Recently we have added to our list of dealers, Pomeroy's, Inc., Reading's largest department store."

The executive personnel of the B. O. R. organization consists of three men, H. A. Ollivierre, president; Ben Bohrer, vice president, and Earl S. Mohn, secretary and treasurer.

The business is systematized so that there are three distinct departments. Bohrer takes care of all matters pertaining to installation, service and delivery. Mohn takes care of all financial matters. Ollivierre attends to sales, purchases, etc.

They have in their territory three factory-trained men, with about three years' experience each. Bohrer is a refrigeration engineer, and worked for the New York Ice Machinery Corp. for about eight years.

Giant Refrigerator Arouses Interest

To call the attention of Charlotte, N. C., citizens to its big spring Kelvinator campaign, the Southern Public Utilities Co. rigged out this special float. The huge refrigerator, which makes the operator look like a dwarf, was an over-size reproduction of a Kelvinator model.



STRONG, CARLISLE & HAMMOND AUGMENTS DEALER STAFF

CLEVELAND—To increase distribution of Norge refrigerators in the metropolitan area and in a number of towns of Ohio, Strong, Carlisle & Hammond, wholesale distributor, has augmented its dealer staff.

New additions to the field force are: Daymude Hardware & Electric Co., 4305 Pearl Rd.; Smerda's Music House, 5800 Broadway; R. F. Taylor Hardware, 93rd and Kinsman, and Boulevard Radio Shop, 4705 Turney Rd., all in Cleveland. Dealers in Ohio towns and cities are: F. E. Grissel Sales Co., Huron; Chagrin Falls Radio & Electric, Chagrin Falls; R. B. Wicks, Burton; Lakewood Norge Co., 16011 Detroit Ave., Lakewood; Sanderson Supply Co., Wooster; Howard T.

Baker, Tiffin; Chas. M. Zitzer Piano Co., Mansfield; Bernasek Bros., Lorain; State Armature Works, Girard; Geo. A. Noftinger, Garrettsville; Service Radio & Supply Co., Canton; Barberton Hardware Co., Barberton, and Ellis & McDonald, Inc., Alliance.

COPELAND, SERVEL APPOINT PORTLAND DEALERS

PORTLAND, Me.—The George H. Twombly Sales Corp., of 642 Congress St., radio dealer, has been appointed Servel dealer in Portland and Cumberland County. R. E. Johnson is manager of refrigeration sales.

Ballard Oil and Equipment Co., of 124 High St., is now handling the Copeland line. John Fortin is in charge of refrigeration sales.

LARKIN

Protected by
U. S. Patent
No. 1,776,235



COILS

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Approved Nationally

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Manufacturers, Distributors and Consumers

Copeland
DEPENDABLE Refrigeration
DETROIT, MICH.

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Electric Refrigeration

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UNIVERSAL
DETROIT, MICH.

**WILLIAMS
ICE-O-MATIC**
REFRIGERATION
BLOOMINGTON, ILLINOIS

B-K, Junior
New Brunswick, N.J.

Zerozone
Lifetime Refrigeration

Absopure
DETROIT, MICH.

**Electric-Automatic
REFRIGERATOR**
PHILADELPHIA

KULAIR
PHILADELPHIA, PA.

JACK FROST
REFRIGERATION, LTD.
TORONTO - CANADA

Wayne
FORT WAYNE, IND.

POTTER
PORTLAND, O.

The use of Larkin 100% Vertical Surface Aluminum Plate Coil (Patented) has grown tremendously during the past year.

Leading manufacturers, some of whom are shown here, have adopted this coil as Standard Factory Equipment. Distributors and dealers pronounce them real sales and service assets. Users find them best because Larkin Coils eliminate the dehydration and defrosting problems and greatly reduce servicing.

Largest Line on Market

93 SIZES MADE

Larkin Coils in sizes for every commercial need and an up-to-date plant to turn out any special size within 24 hours. We will be glad to furnish you full facts on these wonderfully efficient coils. Write us or the manufacturers listed here for complete data.

LARKIN-WARREN Refrigerating Corporation

Originators and Manufacturers

ATLANTA - - - GEORGIA



and Many
Others



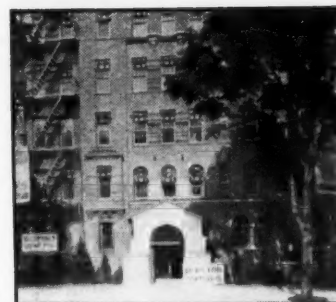
A TINY GAS FLAME TAKES THE

PLACE OF ALL MOVING PARTS

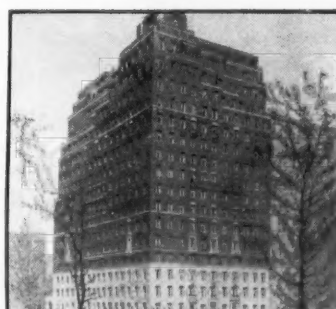
Another reason ELECTROLUX sales continue to zoom is the fact that the first sale of ELECTROLUX to a real-estate operator invariably brings additional orders as he builds or remodels other houses.

ELECTROLUX REFRIGERATOR SALES, Inc., Evansville, Ind.

ELECTROLUX
THE *Gas* REFRIGERATOR



SIX TIMES IN TWO YEARS Spitzer Properties, Inc., have chosen Electrolux. Three times to replace old-fashioned ice-boxes and three times for new apartments. Their building at 150 Ocean Avenue is one of the new apartments.



THIS MAKES SEVEN FOR MR. PATERNO. This new 16-story co-operative apartment at 1220 Park Avenue is the seventh building that Mr. Joseph Paterno has equipped with Electrolux Refrigerators in two years.



THE LUCKY "13th" is the apartment at 30 Beekman Place which Whitecourt Construction Company have recently completed. And they say Electrolux will be used in the new apartment which they plan to build at 785 Park Avenue.



FIFTEEN TIMES GRESHAM HAS VOTED ELECTROLUX. Although they bought their first Electrolux only two years ago, today you'll find more than 700 Electrolux Refrigerators in 15 modern apartment houses owned by Gresham Realty Company.

THE EXPANSION VALVE

Stories of Interesting PEOPLE in the Refrigeration Industry

By GEORGE F. TAUBENECK

Department Stores

"What I can't figure out about this electric refrigeration business," said Bill, who edits books for a Chicago publishing house, and is never happy until he thinks he has found out what's behind everything, "is why in thunder people are spending more and more money for the darned things, when so many other household appliances are going begging."

"Bill," sezzi, real proud-like, "it's because the electric refrigeration industry has attracted some of the most aggressive specialty salesmen and merchandising organizations in the country."

The editor of books frankly looked his skepticism.

"And just to prove it, Bill, come along with me. I'm going to investigate some Chicago department stores. We'll go in and make noises like prospects, and then you may see what potent arguments their refrigeration salesmen can put up."

Willing to be convinced, Bill put on his coat and hat, shuffled the proofs on his desk into some semblance of order, and accompanied me to the Fair—one of Chicago's first class department stores.

After jamming through the swinging doors in one of the entrances to this store, we cruised around the street-level floor, seeking out pretty faces amongst the clerks.

Occasionally Bill would spot a "babe" who looked like good Neysa McMein material, whereupon we would halt, look hopeful, and ask if the Fair sold electric refrigerators. Blond, brunette, or titian—it made no difference. All knew that electric refrigeration was for sale there, and each was able to direct us to that department.

Bill seemed impressed.

Following a ride in an elevator which looked as if it had been packed by a New York subway guard (it was Saturday noon) we arrived at the section of the Fair devoted to electric refrigerators.

To our left we were confronted with a neat display of Copelands and General Electrics. Amidst the G. E. collection stood a well-dressed man with a notebook in his hand. Leaning against a 7 cu. ft. Copeland was a taller, middle-aged man—chewing a toothpick, and humming an indistinguishable tune.

We walked inquiringly up to the display. Bill more or less expected a bum's rush and the presentation of a dotted line as soon as he was spotted, and I at least anticipated the immediate launching of a Sales Talk No. 1 for Customer Who Has Just Walked Into the Store.

Nothing happened. A wee bit disappointed, but still armed with bright

faith in the future, we began to inspect the Copeland line in leisurely fashion.

We opened and shut doors, pulled out ice trays, looked at compressors, rapped on the cabinets, and did a great deal of easily audible wondering.

The G. E. salesman made no move to leave his home base (apparently being off-side in Copeland territory is some sort of a foul).

Still masticating the toothpick, and still humming, the lanky guardian of the 7 cu. ft. Copeland continued to treat us with the same warm cordiality and friendly interest that a lorgnetted society queen would bestow upon her cook and the neighbors' chauffeur should the latter "crash" the same ball the 400 leader was attending.

Bolstering up our nerve, we approached the man-with-the-toothpick.

"Do you sell these machines?" we ventured.

"Yup."

A pause.

"Copeland refrigerators, aren't they?"

"Yup."

Another pause, with appropriate humming from the salesman.

"Aren't you having a special sale on them?" we tried.

"Prices are marked on 'em," he returned, nodding his head in the general direction of the remainder of the display.

Startled at this sudden loquacity, we waxed bold in our interrogations.

"How many have you sold this week?"

The toothpick chewing stopped, and so did the humming. In exactly the same manner used by an ever-suspicious speakeasy guard peering through a square hole in the door to the inner sanctum, the salesman appraised us from Stetsons to Florsheims.

"You'll have to ask someone higher up 'n me," he finally replied.

"Who is the manager of this department?"

"I am."

Bill turned his topcoat collar up around his neck. Also feeling the need of warmth, I joined him in a scam for the elevator.

"That," opined Bill, "is what you call cold-treating the customer. Genuine refrigerated salesmanship."

We tried the Davis Store. Here, after considerable wandering, we found a squadron of thoroughly assorted electric refrigerators—Norge, G. E., Wayne, Servel, Absopure, Iroquois (with Abso-

pure unit), Zerozone, Sanitary, and a few machines with no nameplates.

Seeger, Alaska, Gibson, Progress, and Gurney ice refrigerators were mixed up in the assemblage.

A few minutes of reconnoitering finally brought us face to face with a salesman in another part of the vast room (the refrigeration display was untended).

Courteously he offered to tell us all about the refrigerators there. Stopping in front of a Norge, he explained that it could be plugged into any electrical outlet, that it made nice ice cubes, and that it was really very cheap to run.

He then looked at Bill as if to say: "Well, it's your move."

Bill moved. He mutely indicated that I was the spokesman.

Rising nobly to the occasion, I interrogated:

"What type of compressor has it?"

Flustered and flabbergasted, the salesman fled for help.

After a decent wait for his return, we again threaded the labyrinth back to the elevators.

"What in thunder," asked Bill—who edits literature for a living, and therefore must be excused for his ignorance of things mundane, "is a compressor?"

Into Marshall Field's leviathan emporium we next proceeded with the same high spirits displayed by a truant small boy entering a woodshed two steps in advance of his father and a razor strop.

Again pulchritudinous hosiery and glove clerks smilingly directed us to the electric refrigeration department. Again we located it by penetrating a jungle of floor lamps, bookcases, and grandfather clocks.

This time an obsequious old gentleman was standing squarely in front of the small group of Norge and Williams Ice-O-Matic refrigerators. Bill alerted the cross-examination, and learned that while the Ice-O-Matic had its machine on top, the Norge machine was "down underneath."

It was also pointed out that one was more expensive than the other, but that both were "very good refrigerators for the money."

"Were you looking for something in that line today?" queried the old gentleman.

We weren't, albeit this was the first approach to a sales talk we had heard during the day.

"Specialty salesmanship," observed Bill profoundly, "is on the decline. Now when I was out selling aluminum ware . . ."

Flowers for Maj. Blood

"Oh," gushed the Sweet Young Thing—when told what occupied the Valve's days and nights. "My mother has just bought an electric refrigerator. And she's so crazy about it she walks back into the kitchen a DOZEN times an HOUR just to LOOK at it. She's as PROUD of it as she'd be of a GRAND-child, and Dad has been stuffed with frozen desserts until he's about to POP!"

"What make of refrigerator is it?" I asked.

"Why, it's a Norge," cooed the S. Y. T. "Here," said the Valve, producing a copy of ELECTRIC REFRIGERATION NEWS for April 8, "is a picture of Maj. Howard Blood, the president of the company which manufactured your mother's refrigerator."

"Oh-h-h-h, ple-e-ase give it to me, won't you?" appealingly and wistfully from the S. Y. T. "I'll take it right home to mother. I just KNOW she'll send Maj. Blood some FLOWERS or something. I mean I think she REALLY WILL!"

So if the busy president of the Norge Corp. receives a floral tribute from a social leader down in southern Illinois, he can't say we didn't warn him.

Col. Frank E. Smith

Seated across a dinner table from Col. Frank E. Smith, a person of ordinary size is acutely conscious of being dwarfed. After listening awhile to his pungent remarks and keen observations, the listener may be even more acutely conscious of being eclipsed by the dynamic president of Servel, Inc.

Col. Smith's mental stature seems more than commensurate with his massive head and frame. The things he says may be startling, but they are convincing.

Usually attached to his pointed statements are a few oral footnotes drawn from many years of executive experience. Backed by these facts, he goes ahead to enlarge upon his thunderclap

themes until one is pretty well convinced that Reason, Logic, and Actuality have at last joined hands and been transformed into the Three Graces.

En passant, it might be set down that perhaps the most pleasing feature of his conversation is the altogether delightful way he has of smiling unexpectedly with his eyes.

Col. Smith has a recipe for eliminating the habit of working nights. His recommendation is simply this: Instead of shaving in the morning upon arising, shave at night before dinner.

Thus refinished and refurbished, the inevitable next move will be a shower and a change of clothes, Col. Smith will tell you.

Perhaps a gay boutonniere will be procured. A good dinner, a good cigar, and the no-longer-tired business man will feel like stepping out a bit. And so he doesn't return to the office.

Being an inveterate nocturnal laborer, the Valve tried this recipe for three successive nights. He ventures to be so bold as to inform Col. Smith that, in one case at least, the formula won't work.

One does feel like giving the bright lights a whirl. But somehow the pile of stories to write, editorials to think out, headlines to concoct, pages to make up, visitors to receive, and letters to answer (or what have you) diminishes not one whit under absent treatment.

Other solutions to this most pernicious problem will be kindly received and competently tested in our own laboratories.

Paul Jones

Although the name of Paul Jones of Servel has appeared in this kolum before, his rather unique story has never yet been told in public, so far as we are able to determine.

An Evansville boy, he had early experience in the coal business. Came then Frigidaire, and Paul was named a distributor for the Dayton organization.

For a long time he was a thorn in the flesh of Sam Vining, Servel sales manager, for Jones went out and sold Frigidaires in a fashion which was as effective as it was aggressive.

One day Vining and Jones met. They liked each other instantly, and became friendly enemies. When the then-serving Servel advertising manager relinquished his position to become a Servel distributor, the powers-that-be in Evansville called Jones into consultation and offered him the vacant chair. He took it.

Preparing advertising copy was as new and unfamiliar to him as polar explorations would be to a village postmaster. He did, however, know a great deal about merchandising; and it wasn't long until he had four-color technique and layout design eating out of his hand.

Today he spends much of his time with Servel distributors, helping them with their sales and sales promotion departments. He prepares his advertisements and his house organ on trains.

Sam Vining and the Two-Gun Hombre

"When I pick up a bit of fiction," says Sam Vining, "I look first at the end of the story. If it has an unpleasant ending, I don't read it. So much of my days are spent in situations which have possible unhappy endings that I don't want to worry about any more of that sort of thing when I relax."

The Valve once knew an avid reader of detective tales who used to begin reading a book in its middle. Then she had two things to puzzle over; how it began, and how it was going to come out in the end.

The Servel sales manager has, he declares, one favorite plot. Of this theme and its variations he never tires. It unfolds something like this:

Up to the Blazing Stump bar in the roaring mining town of Carcass Gulch steps an unfamiliar hombre. Black Pete, the bully of Carcass Gulch, sizes up the newcomer and offers him a drink. The visitor declines without thanks.

"Thar's no man ever refused to drink with Black Pete over this yere bar and lived to tell the tale," draws the bully of Carcass Gulch, and makes a lightning move for his pistol.

But the newcomer, with a quicker-than-lightning draw, the like of which had never been seen before

around them there parts, drills Black Pete before the scoundrel could get to his Colt.

A death-like stillness prevails while the "furriner" orders a quart of raw whisky and swigs it all at one tipping. Then Old John Calico, the patriarch of Carcass Gulch, mooches up to the conqueror of Black Pete and opines:

"Stranger, that there was a mighty pert draw ye had. I recollect but one man who could shuck his Colt that fast, and his name was Deadeye Dick Dugan."

"That man," answers the stranger, his steely-gray eyes softening a bit in retrospect, "was my pappy!"

Finis.

Vining declares that fairy tales are the only real literature of a race. They sum up the knowledge of the ages, the philosophy of nations, he believes.

"To be successful," says this dilettante in things literary, "a fairy tale must have a Good King and a Bad King. The latter exists only for the purpose of providing the former with someone to conquer at the end of the tale."

"Conflict provides the principle theme, just as conflict provides the principle theme of all life."

Marlene Dietrich

Back from her native Germany, where she has been vacationing with her husband and baby daughter, comes Marlene Dietrich, intriguing new screen star. Back with Frau Dietrich comes the daughter, Maria Seiber.

Awaiting Paramount's new b. o. (box office—fooled you, eh?) attraction and her child will be a modernistic dressing room suite equipped with, among other things, an electric refrigerator.

Reports from Hollywood indicate that even some of the new portable dressing rooms are being equipped with electric refrigeration.

And stepping on the heels of these yarns is the Los Angeles Gas & Electric Co. with the tale that talkie luminaries out there are buying second-hand electric refrigerators, and installing them in basements for fur storage during Summer!

Earl Carroll

Earl Carroll once won considerable notoriety in connection with bathtubs. Now it's refrigerators.

A contributor tips us off that in Carroll's modernistic new theater will be installed a special florist's refrigerator to take care of all the posies sent by front-row baldheads and stage-door Johnnies to the sisters of the chorus. A worthy undertaking.

Ten Cents Apiece

A contributor from the Electrolux sales promotion department vouches for this one:

A representative of the Lone Star Gas Co. of Dallas, Texas, was making a survey of "Stargas" dealers in southwest Texas.

In a small town near the Mexican border, he found an Electrolux owner who was paying operating expenses by selling ice cubes at 10 cents apiece to Mexican laborers!

Disaster in Nicaragua

Readers of the daily press should know all about the recent devastating earthquake which brought destruction and ruin to Managua in Nicaragua.

To C. U. Williams, president of the Williams Oil-O-Matic Heating Corp., came the following letter concerning the behavior of Ice-O-Matic refrigerators during the earthquake.

It was signed by F. Alf of Pellas & Co., Ice-O-Matic distributor in Managua. Alf writes:

"The bins of spare parts were knocked over, as well as the files, and things were in a pretty mess, aggravated by the fall from stands of paint with broken and spilled cans."

"Our stock of Ice-O-Matics is on the third floor, and all those models with the compressor on top were thrown over."

"No material or serious damages are anticipated from these, however, for we have one of them set up on the roof in working order, and are supplying ice cold drinks to our friends."

"We lost some Ice-O-Matics which were on demonstration. We collected an assortment of burned-up parts, and two in perfect condition, where the house had fallen but not burned."

"We undoubtedly will sustain a loss of uncollected accounts, for many of our customers have been killed and others have lost heavily."

"Fortunately our employees are all safe, although members of the families of some were killed outright, or died later from injuries. The wife of our cashier was disinterred alive, suffering only some bruises."

"Our business will continue as usual."

BOHN PIONEERED THE PORCELAIN REFRIGERATOR

This is but one of the many advances pioneered by the Bohn engineers during thirty-five years of quality manufacturing.

BOHN has built thousands of cabinets for manufacturers of refrigerating machines who desired the utmost in beautiful and scientific construction to best set forth their mechanism.

BOHN would be glad to figure with those organizations who recognize that a quality all-porcelain refrigerator is a distinct merchandising asset.

BOHN REFRIGERATOR COMPANY
SAINT PAUL, MINNESOTA

Write for details of low prices now prevailing on stock models.



FRIGIDAIRE
Advanced Refrigeration

*Man's
greatest gesture
skysward*
**..EMPIRE STATE
BUILDING**

**FRIGIDAIRE SELECTED FOR THE
WORLD'S TALLEST BUILDING . . .**

TODAY a nation lifts its eyes
to awe-inspiring heights in tribute to the skill and genius
that have given the world a towering monument to commerce
and industry—the new Empire State Building.

All the manufacturers whose products have been singled
out for use in this great building are justly proud of the distinction
—a distinction in which we are privileged to share.

In keeping with the excellence of appointments throughout the
building, the Board of Directors are installing Frigidaire Water
Coolers—a choice that was made only after engineering tests had
proved conclusively that Frigidaire best maintained the high stand-
ard of excellence demanded by architects, builders and engineers.

When you consider that Frigidaire Water Coolers have been selected
not only by the Empire State Building; but also by thousands of other
office buildings throughout the world, where quality, quiet operation,
and continued satisfaction are the sole deciding factors—for you, too,
there can be but one choice—Frigidaire.

FRIGIDAIRE CORPORATION • DAYTON, OHIO
• • • SUBSIDIARY OF GENERAL MOTORS CORPORATION • • •

FRIGIDAIRE
A GENERAL MOTORS VALUE

STARNETT BROTHERS & EKEN, INC., BUILDERS
SHREVE, LAMB & HARMON, ARCHITECTS

THE entire refrigeration industry awaited with keenest interest the selection of water cooling equipment for the Empire State Building. For it was realized that this selection would carry with it an endorsement that would influence buyers of refrigeration

throughout the nation. • And now the advertisement reproduced above is spreading the news that the choice was Frigidaire—and Frigidaire dealers are finding the results of this and similar announcements reflected by increased sales and profits.

FRIGIDAIRE CORPORATION, SUBSIDIARY OF GENERAL MOTORS CORPORATION, DAYTON, OHIO

FRIGIDAIRE
A GENERAL MOTORS VALUE

THE NEW ALL WHITE PORCELAIN-ON-STEEL FRIGIDAIRE'S ARE SOLD WITH A THREE-YEAR COMPLETE GUARANTEE

EXPORT INFORMATION ON SAO PAULO, BRAZIL

Low Coffee Prices Affect Sales Of Refrigerating Equipment

By C. R. Cameron
American Consul General
Sao Paulo, Brazil

POTENTIALLY Sao Paulo is a fine market for electric refrigerators. The economic situation is, however, such as to limit greatly the market for all but products of the utmost necessity. Accordingly, trade in highly specialized articles produced by Americans, has suffered since the decline in coffee prices beginning in September, 1929. The demand for electric refrigeration apparatus has decreased considerably.

The Sao Paulo refrigerator market, both domestic and commercial, is largely in the hands of two well-known American manufacturers. A few European machines, principally Swiss and German, are sold, but the competition offered to the two American manufacturers is negligible.

Commercial users of electric refrigeration equipment include packing house companies, hotels, and dairies. In the home, the electric refrigerator is gradually penetrating, but its use is in no manner comparable to that in the United States.

There is now an apartment building in which installations have been made. The homes of many members of the American and British colonies are provided with electric refrigerators, but as a rule only the more luxurious Brazilian homes are so provided.

An intelligent campaign is being conducted by American manufacturers established in the local market, and, with the return of normal economic conditions, sales, will no doubt, increase.

Electric refrigerators are sold here either by a branch of the manufacturer or by a distributor. The sales force is part of the branch or distributing company, as no dealer organization exists.

A question which is receiving a considerable amount of attention from the importers of electric refrigeration machinery and cabinets is that of the classification of such products under the Brazilian Customs Tariff.

According to Section 1009 of the Tariff, covering "refrigerating machinery of

whatever kind" the rate is 100 reis per kilo, gross.

Section 1037, on the other hand, covering "ice chests" prescribes a duty of 250 reis, gross. Ice chests are manufactured in Brazil.

The two tariffs applicable to refrigeration apparatus are of importance in the matter of domestic electric refrigerators, inasmuch as the electric refrigerating equipment is generally a part of the unit.

It should be observed that duties payable are considerably higher than list duties, due to the method of collection, which consists of levying 60 per cent of the duty in gold and 40 per cent in paper.

The gold milreis (written 1\$000) is converted into paper at a rate, or *agio*, fixed in general conformity with the international exchange value of the paper milreis, the circulating medium, and was on March 9, 1931, 6\$707 paper for 1\$000 gold.

To compute the rate payable, the listed rate being 100 reis per kilo, it is necessary to multiply 6\$707 by 0\$060 (60 per cent of 0\$100), which equals 0\$402. Adding the 0\$040 originally levied in paper, the total duty payable becomes 0\$442 per kilo. At the approximate rate of 12\$000 per dollar, this duty is equivalent to about 3.7 cents. Computed in the same manner, the listed duty of 250 reis becomes 1\$006, or 8.4 cents.

Portuguese is the language of Brazil and all correspondence with commercial firms in this country should preferably be conducted in that language. Price lists and similar printed material in Portuguese usually bring the best results.

Although many of the business managers in Brazil are more or less familiar with English, Portuguese should ordinarily be used. Spanish is commonly understood here, but should be avoided, since there is noted among Brazilians a certain resentment against the assumption that Portuguese is not an important language.

Users of Refrigeration

Continental Products Co., Osasco, State of Sao Paulo, (packing house); Frigorifico Anglo, Rua da Quitanda, 12, Sao Paulo, (packing house); Armour of Brazil Corp., Fazenda Anastacio, State of Sao Paulo, (packing house); Pirie Villares & Cia., Praca da Republica, 5, Sao Paulo (manufacturers' agents).

Hotel Carlton, Rua Libero Badaro, 26, Sao Paulo; Hotel D'Oeste, Rua da Boa Vista, 46-A, Sao Paulo; Esplanada Hotel, Esplanada Municipal, Sao Paulo; Hotel Regina, Largo Santa Efigenia, 8, Sao Paulo; Hotel Milanesi, Avenida Sao

Joao, 42-2° andar, Sao Paulo; Hotel Terminus, Rua Brigadeiro Tobias, Sao Paulo.

J. Bruno, Rua Conselheiro Chrispini, 7, Sao Paulo (dairy); Leitaria Campo Bello, Rua Sao Bento, 14-B, Sao Paulo (dairy); Comp. Beneficiadora de Taubate, Alameda Dino Bueno, 26-sb, Sao Paulo (dairy); Comp. Nestle, Rua Ypiranga, 23-B, Sao Paulo (dairy); Cotrim & Cia., Rua Chavantes, 111, Sao Paulo (dairy); Entrepoteo Paulista, Ltd., Rua Dr. Almeida Lima, 129, Sao Paulo (dairy); Sociedade Lorenense Lactinios, Ltda., Rua Brigadeiro Galvao, 128, Sao Paulo (dairy).

Sociedade Productora Lactinios Guaratingueta Ltda., Avenida Celso Garcia, 232-A, Sao Paulo (dairy); Fabrica de Productos Alimenticios Vigor S/A, Rua Joaquim Carlos, 174, Sao Paulo (dairy); Usina de Lactinios Vigor, Rua Joaquim Carlos, 174, Sao Paulo; Zicarelli & Silva, Rua Eliza Whitacker, 60-sb, Sao Paulo; Industrias Reunidas F. Matarozzo, Rua Direita, 15, Sao Paulo (packing house, importer of fish, industrial machinery, etc.).

The Sao Paulo Consular District comprises the States of Sao Paulo (except the Municipalities of Santos and Sao Vicente), Parana and Matto Grosso.

Area, Climate, Topography

The area of the State of Sao Paulo is about 96,000 square miles, or slightly less than that of Oregon. The climate, though semi-tropical, is temperate, the mean annual temperature at Sao Paulo City being about 65° F. The greater part of the state lies on a broken plateau, averaging about 2,500 ft. elevation.

Population, Race, Language

The population of Sao Paulo State is about 7,000,000 and the populations of the principal cities are about as follows: Sao Paulo, 1,000,000; Campinas, 80,000; Ribeirao Preto, 30,000. There are in the State about 450,000 immigrant Italians; 220,000 Portuguese; 210,000 Spaniards; 120,000 Polish, and 90,000 Japanese, as well as smaller numbers of many other nationalities.

American citizens number about 1,100. Brazilians here are chiefly of the white race. The official language is Portuguese and correspondence and advertising in that language produce the best results. The people, in general, are industrious and maintain a relatively high standard of living.

Occupations and Industries

The production and exportation of coffee constitute the chief industry and basis of the prosperity of the State. The raising of cattle and hogs is extensively engaged in as is also the growing of sugar, cotton, fruit, and other agricultural products. There are four packing houses in the State.

Sao Paulo is perhaps the leading industrial district of South America, its factories producing cotton, woolen, jute and silk textiles, shoes, beverages, furniture, hats, tobacco, chemical products, foodstuffs, matches, ironware, glass, earthenware, paper, cement and many other articles. Hydro-electric power developments on a large scale exist and in recent years several new plants have been installed.

Imports and Exports

The principal imports are agricultural and industrial machinery, iron and steel, textiles, flour and other foodstuffs, chemicals and drugs, leather, jute, automobiles, electric equipment, etc. In round numbers imports through Santos in 1929 amounted to \$166,000,000 and in 1930 to \$79,500,000, of which about one-quarter came from the United States.

Other leading countries of origin were Great Britain, the Argentine, Germany and Italy. The leading export product is coffee, of which Sao Paulo in the past has exported over two-fifths of the world's consumption. Chilled meats, hides, fruit, cotton seed, etc., are exported in smaller and varying quantities. In round numbers exports in 1929 were valued at \$247,000,000 and in 1930 at \$143,000,000, of which about 57 per cent went to the United States. Other important buyers of Sao Paulo products were Germany, France and Holland.

Customs Policy and Regulations

Duties are highly protective and usually specific, but *ad valorem* duty is assessed on automobiles and accessories, and on many other articles. Heavy fines are imposed for failure to produce correct consular and commercial invoices, duly certified, and for other infractions of the regulations—the customs employes discovering a delinquency participating in the fine collected. American exporters should use the greatest care in complying with the Brazilian customs regulations, and in following the instructions of importers.

Postal Regulations and Rates

The postage rate on letters from the United States is two cents an ounce or fraction thereof. Packages weighing up to 22 pounds may be sent by parcel post. Mail may be sent by air to Brazil.

Transportation

Steamship service between United States ports and Santos is as follows: Munson Line, fast American-flag steamers, carrying passengers, mail and cargo, with fortnightly sailings from New York; Furness-Prince Line, fast British steamers, also with fortnightly sailings from New York; vessels, chiefly cargo, of American Republics, Lloyd Brasileiro, Wilhelmsen, Lamport & Holt, Blawan Line, etc., from east coast ports; vessels, mainly cargo, of Lloyd Brasileiro, Gulf-Brazil-River Plate, and Munson Line from Gulf ports; vessels, mixed, of McCormick Steamship Co., Westfall Larsen Line, etc., from Pacific coast, service northbound being by the Osaka Shosen Kaisha Line. From Santos there are good railway connections

Exports of Refrigerators

January Shipments Reported by the Bureau of Foreign and Domestic Commerce

	Electric Household Refrigerators		Electric Commercial Refrigerators Up to 1 Ton		Parts for Electric Refrigerators
	Number	Value	Number	Value	
Austria .....	...	...	...	...	\$ 639
Belgium	78	\$ 11,220	21	\$ 2,719	12,396
Bulgaria .....	...	...	...	...	48
Czechoslovakia .....	...	...	...	...	5,495
Denmark	19	2,343	2	476	636
Finland .....	...	...	...	...	97
France	118	14,974	81	15,337	17,393
Germany	8	1,328	15	4,122	7,950
Gibraltar	1	475	...	...	...
Greece .....	...	...	1	179	...
Irish Free State .....	...	...	...	...	950
Italy .....	...	...	30	5,211	2,226
Netherlands	22	4,281	9	1,659	258
Norway	4	566	7	2,803	923
Poland and Danzig .....	...	...	...	...	385
Portugal	1	335	...	...	...
Soviet Russia in Europe .....	...	...	1	330	...
Spain	39	7,604	30	3,379	1,178
Sweden	10	2,892	...	...	5,373
Switzerland	28	4,118	12	2,054	4,545
United Kingdom	111	15,714	222	40,630	49,719
Canada	237	31,622	76	11,967	25,632
British Honduras .....	...	...	...	...	165
Guatemala	12	2,049	...	...	34
Honduras .....	...	...	1	743	...
Nicaragua	14	2,259	...	...	22
Panama	29	7,070	1	160	7,903
Salvador .....	...	...	...	...	76
Mexico	120	18,145	9	2,254	492
Bermudas	13	1,986	...	...	553
Barbados	3	772	1	206	...
Jamaica	1	192	2	451	303
Trinidad and Tobago .....	...	...	...	...	31
Other British West Indies .....	...	...	...	...	52
Cuba	62	9,584	9	2,984	401
Dominican Republic	19	3,253	1	609	1,340
Netherlands West Indies .....	...	...	1	205	289
Haiti, Republic of	8	1,184	...	...	...
Virgin Islands of U. S.	1	175	...	...	17
Argentina	123	16,756	6	3,692	7,187
Brazil	300	44,807	6	3,504	6,864
Chile	42	6,359	...	...	93
Colombia	36	4,787	2	578	68
Ecuador	10	1,670	...	...	...
British Guiana .....	...	...	...	...	546
Peru	17	2,425	...	...	100
Uruguay	52	7,322	1	239	1,940
Venezuela	104	11,584	7	1,776	2,105
Aden	3	587	...	...	...
British India	46	7,041	...	...	5,235
British Malaya	10	1,577	...	...	25
Ceylon	10	1,483	...	...	43
China	123	14,019	3	906	4,518
Other Netherland East Indies .....	...	...	...	...	210
French Indo-China	10	2,884	...	...	...
Hong Kong	21	3,552	...	...	211
Japan	34	5,559	2	505	1,567
Philippine Islands	25	3,832	...	...	627
Siam .....	...	...	...	...	193
Syria	2	304	...	...	26
Australia .....	...	...	...	...	1,112
New Zealand	1	83	1	249	58
Belgian Congo	6	833	...	...	...
British East Africa	18	4,116	3	1,255	721
Union of South Africa	215	30,143	6	821	2,651
Gold Coast	1	251	...	...	185
Nigeria	30	3,420	...	...	...
Other British West Africa	1	131	...	...	...
Egypt	2	495	1	214	...
Algeria and Tunisia .....	...	...	...	...	773
Other French Africa	1	235	...	...	...
Liberia	3	210	...	...	...
Morocco	6	871	8	1,694	75
Mozambique	13	1,960	...	...	...
Total	2,223	\$323,437	578	\$113,911	\$184,654
Shipments to Hawaii	84	12,301	2	334	2,452
Porto Rico	38	6,150	3	1,038	468

with the interior. There are now over 4,000 miles of railway connecting all developed parts of the state.

Credit Terms and Money

Well established concerns expect to receive credit terms of 90 to 120 days. Importers prefer prices to be quoted c. i. f. Santos. Information as to credit rating may be obtained from banks or from credit rating agencies such as R. G. Dun & Co. The milreis, written 1\$000, is the monetary unit and the exchange value has been varying from about 9 to 10 cents.

State of Parana

Parana has an area of about 77,000 square miles and a population of about 1,000,000. It is estimated that 40 per cent of the inhabitants are foreign born. The populations of the principal cities are about as follows: Curitiba, the capital, 90,000; Paranaguá, the principal seaport, 14,000; Ponta Grossa, a leading interior city, 22,000; Antonina, a seaport, 8,000; Jaguarihyva, an important hog raising city, 3,500.

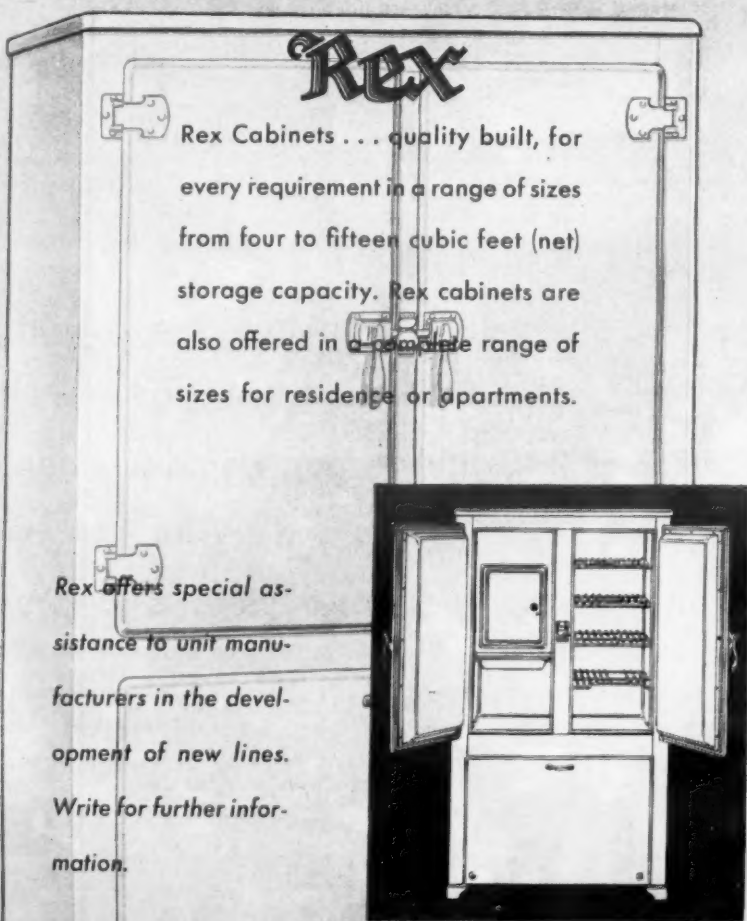
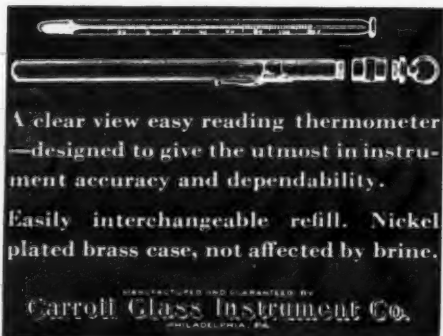
The climate is much cooler than that of

Sao Paulo, and heavy frosts are often experienced, especially in the south. The chief exports are coffee, lumber and mate (Brazilian tea). The commercial and industrial development and transportation facilities are notably inferior to those of Sao Paulo. The Booth Line, the Lloyd Brasileiro, and sometimes the Gulf-Brazil-River Plate, call at Paranaguá.

State of Matto Grosso

Matto Grosso, with an area of approximately 637,000 square miles, is the second largest State of Brazil. Its population is about 337,000. The principal industries are cattle raising, mining, the gathering of mate, and rubber, and the manufacture of sugar, alcohol and dried beef (*xarque*). The chief export commodities are cattle, rubber, mate, dried beef, and hides and skins, principally to the Argentine.

The largest cities are Cuyaba the capital, 20,000 inhabitants; Campo Grande, 15,000; Corumba, 10,000; Ponta Pora, 7,000, and Tres Lagoas, 3,000. The State is rich in woods, medicinal and fibrous plants, and in minerals, including diamonds and semi-precious stones in wide variety.



Rex Manufacturing Co., Inc.
Connersville, Indiana



30
AMAZING
FEATURES

For many weeks prior to the actual appearance of the Majestic Refrigerator, this company assured Distributors, Dealers and the Public that its new product would be, above all else, a piece of Highest Quality Merchandise.

- Every promise made was amply fulfilled . . . as has been proved by the performance of many thousands of these refrigerators in the homes of delighted and completely satisfied owners.

- It becomes more apparent each week that a Majestic Refrigerator Franchise is one of the most valuable that a Dealer can hold. Our Distributors are rapidly closing such agreements assuring dealers the handsome profits of the greatest year in electrical refrigeration history.

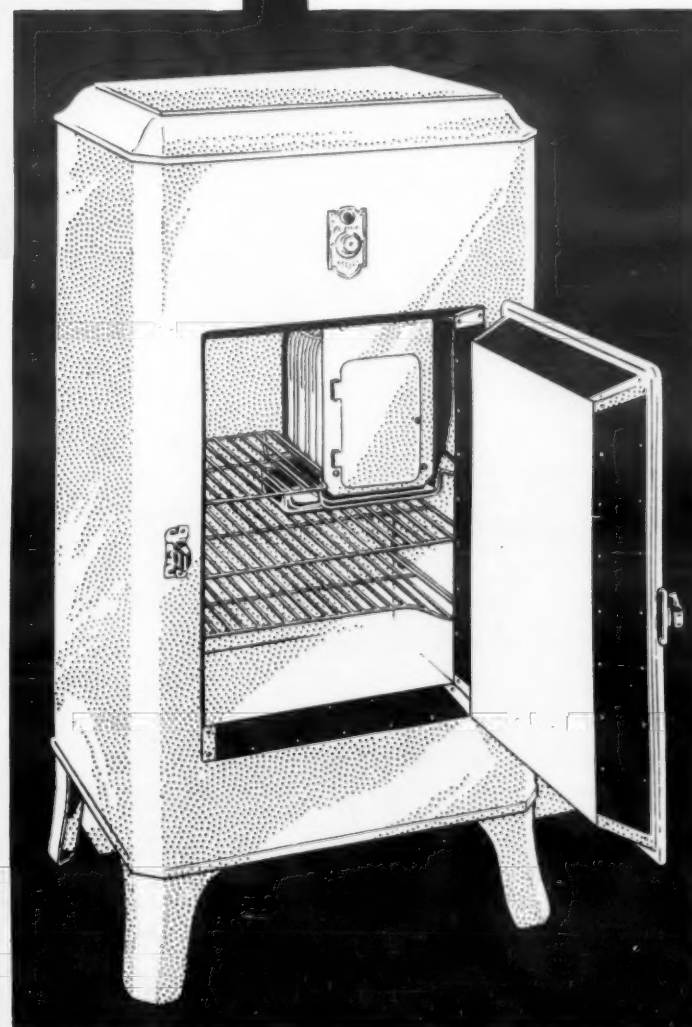
GRIGSBY-GRUNOW COMPANY, CHICAGO, ILLINOIS

Majestic

ELECTRIC REFRIGERATOR

Made in 3 sizes, with 7½, 8½ and 10 square feet of shelf area. All have Pyroxalin Lacquer exterior finish, Porcelain-on-Steel interior, Positive Air Circulation feature, Hermetically Sealed Unit and 26 other great features.

Prices \$169.50 and up, f. o. b. factory



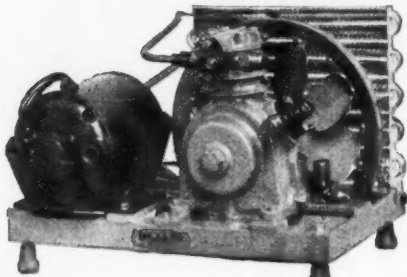
WILLIAMSPORT DISTRIBUTOR

WILLIAMSPORT, Pa.—The Edison Shop here recently took over the distribution of Kelvinator equipment. F. B. Myers is proprietor.

DICELER
ELECTRIC REFRIGERATION

—PRODUCTS—

A SERVICE TO THE REFRIGERATION INDUSTRY



Model 400, 1-6 H.P. Single Cylinder Condensing Unit

PRECISION BUILT COMPRESSORS and COMPLETE CONDENSING UNITS

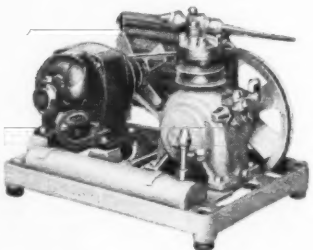
for Electric Refrigeration Manufacturers, Distributors and Dealers

Our plan allows the assembler to advertise and sell under his own name. Sizes for 1/6, 1/4 and 1/3 H. P. Also commercial sizes up to 3 H. P. Air and water cooled. Sulphur dioxide and methyl chloride condensing units. Ideal for domestic refrigerators, ice cream cabinets, water coolers and small commercial installations. Prices lowest in the history of electric refrigeration. Full details given on request.

Deissler Machine Company
Greenville, Pa.

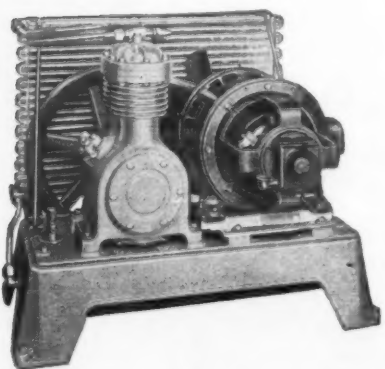
New York Office, 15 Moore Street
Manufacturers of complete domestic and commercial refrigeration systems

KULAIR
Simplicity, quality,
efficiency and capacity
unequaled.



A size for every use.

Methyl Chloride
or
Sulphur Dioxide
Air or Water Cooled
CONDENSING
UNITS



95 to 2500 Lbs.

•
The Important Enhancement
of Dealer and Retail customer confidence in Kulair clientele
Allowing Distribution and Sales
UNDER PRIVATE BRANDS
will benefit
your distributing establishment.

KULAIR CORPORATION
PHILADELPHIA, PA.

LOUISVILLE CO. TURNS HOME INTO OFFICES

LOUISVILLE, Ky.—New quarters were formally opened here a short time ago by the Electric Refrigeration Co., General Electric refrigerator dealer here.

The new display room and office building is located at 719 East Broadway. The exterior of the structure is novel, unique, and presents the appearance of a home.

The first floor of the building is devoted to the display of all commercial and domestic models and a model kitchen and meeting room, the latter large enough to seat 100. The balcony is devoted to a reception and waiting room for the convenience of customers. Also on the balcony are the commercial department office and retail household sales office.

Offices of company executives are located on the second floor: E. J. Nellor, president; E. J. Theobald, vice president and A. C. Link, secretary-treasurer. On the third floor is another conference room.

In addition to the new display room, the company maintains its sales room in the Heyburn building, which is devoted exclusively to household models.

YEAGER PUT IN CHARGE OF EISENBRANDT SCHOOL

BALTIMORE—The Eisenbrandt Radio Co., distributors of Majestic refrigerators and radios in the state of Maryland, District of Columbia, and parts of West Virginia, Virginia and Delaware, has established a refrigeration sales school in Baltimore and Washington to prepare salesmen for dealers in the field.

H. Wilson Yeager, formerly connected with the Majestic sales school at Chicago, has been placed in charge of the school.

The company is now conducting a specialized refrigeration sales course, under Mr. Yeager's direction, in Baltimore and Washington, alternating weekly between the two cities.

New additions to the refrigeration department of the company are William S. Armiger and I. P. Hall from local General Electric forces.

Mr. Armiger is now connected with the Baltimore wholesale department, and Mr. Hall is supervisor of four large department stores with a sales force of twenty-four men.

BROAD RIVER CO. PREPARES FOR SPRING CAMPAIGN

COLUMBIA, S. C.—The Broad River Power Co., a part of the Associated Gas and Electric System, has begun preparing for its second Refrigeration Jubilee, which will begin May 11th.

The Jubilee was announced with a full page ad in the *South Carolina Housewife News*, a publication put out by the company as advance publicity for an electric cooking school.

These classes of culinary art are being conducted in all of the towns served by the company. Displays of Kelvinators to be sold during the Refrigeration Jubilee are being used at the cooking schools.

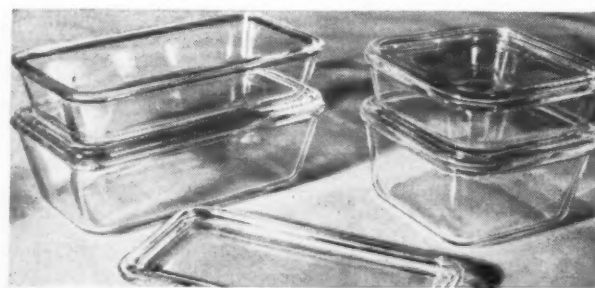
BOWLES TAKES OVER SHOP

PITTSFIELD, Mass.—The Berkshire Electric Appliance Co., General Electric dealer at 270 North St., has been reorganized as Bowles' Electric Shop, with H. J. Bowles continuing in charge.

Little
'EXTRAS'
often swing
the sale . . . always build goodwill

PYREX
Refrigerator
Dishes as
premiums give
that added pull

PYREX REFRIGERATOR DISHES



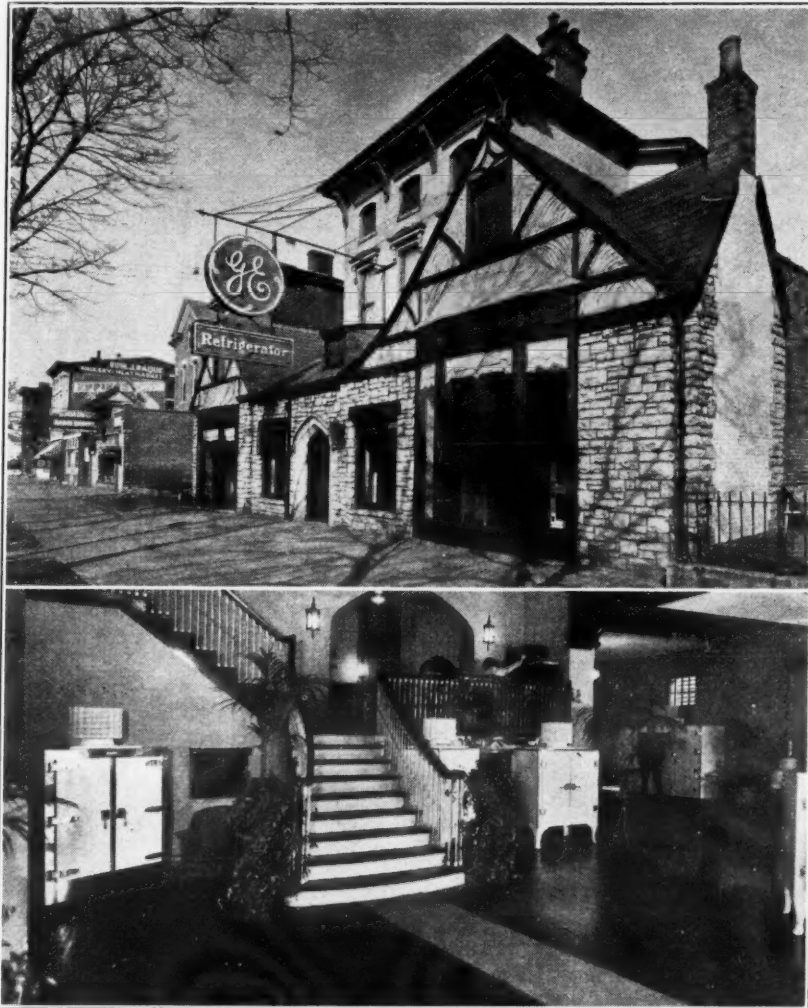
As leads . . . as goodwill builders . . . for advertising purposes . . . as effective persuaders when sales hang in the balance . . . nothing works like a premium. And when selling refrigerators, the most appropriate premiums are, of course, those that boost the value of the refrigerator itself . . . add a convenience that the buyer appreciates.

Made of the famous Pyrex heat-resistant glass, impervious to the heat and cold alike, Pyrex Refrigerator Dishes serve a triple purpose . . . they may be used for baking, serving and refrigerating. Single dishes retail for as little as 85c—set of four \$4.40.

Write to Corning Glass Works, Corning, New York.

Trade-mark "Pyrex"
Reg. U. S. Pat. Off.

Design Strikes Novel Note



New Home of G. E. Refrigerators in Louisville

HARBERT HEADS FRIGIDAIRE SEATTLE AGENCY

SEATTLE, Wash.—Operating as Frigidaire commercial and apartment house dealer for Seattle and King County, the Commercial Refrigeration Sales & Service Co., which was recently appointed, has opened headquarters at 1927 3rd St.

W. C. Harbert, who is general manager of the company has been with Frigidaire since 1924.

Adjoining the quarters of the Commercial Refrigeration company are the new showrooms of McBride and Saunders, Inc., also dealers. J. W. Saunders is president and A. McBride is secretary and treasurer.

NEW MANAGER, DEALERS NAMED IN EAST

PROVIDENCE, R. I.—D. Schaffer has been made manager of the local office of Gentsch & Thompson, Inc., southern New England distributor of General Electric refrigerators. He succeeds Paul Gill, who recently joined the company.

The Shepard Stores of this city are now handling General Electric refrigerators.

Blackstone Valley Gas & Electric Co. has added General Electric and Westinghouse lines in its electric refrigerator department.

NEW COMPANY IN AKRON SELLING MAJESTICS

AKRON, Ohio—The Five Points Refrigerator and Radio Co., Inc., Majestic refrigerator and radio representatives, recently opened show rooms at 499 Exchange St.

BACKSTROM NAMED MANAGER OF REX COLE BRANCH

NEW YORK CITY—With the promotion of Victor S. Backstrom to manager of the Rex Cole branch at Port Richmond, Staten Island, comes the announcement that substantial increases would be made to the sales organization throughout the Island generally.

Mr. Backstrom was formerly connected with the Cole organization in Jamaica, Long Island.

DOYLE, GROSSMAN COVER NEW TERRITORIES

BIRMINGHAM, Ala.—C. J. Doyle has succeeded A. W. Grossman as Electrolux district sales manager. He will cover two states, Alabama and Mississippi.

Mr. Grossman was transferred to Ohio, West Virginia, Kentucky and Indiana territory.

PEIRCE-PHELPS ANNOUNCES CHANGE IN STAFF

PHILADELPHIA — Peirce - Phelps, Inc., distributor of Majestic radios and refrigerators of this city, recently made several changes in its staff.

Paul C. Richardson has been made radio sales manager, Walter P. Davis is in charge of refrigerator sales, A. E. O'Brien is sales manager of the tube division, and B. Albert Rhimer has been named advertising manager.

SHREVEPORT DEALER GETS LARGER TERRITORY

SHREVEPORT, La.—The Frigidaire dealership in four parishes of north Louisiana has been taken over by E. P. McCollister, succeeding the Automatic Refrigeration Co., Inc., which has had the dealership for several years. The territory consists of Caddo, Bossier, Webster, Red River and DeSoto parishes.

APEX
Automatic
Refrigeration
Specialties

Expansion Valves,
Pressure Control
Water Regulators,
Gas Pressure
Regulators, and
Water Pressure
Regulators.

APEX REGULATOR COMPANY
DIVISION OF
FISHER GOVERNOR COMPANY
MARSHALLTOWN, IOWA



KANSAS CITY SHOW NETS 540 ORDERS

KANSAS CITY, Mo.—"You can get a prospect to look at 12 different refrigerators which are being demonstrated under one roof, and to reach a decision to buy, much easier than you can induce her to go—and drag Friend Husband along!—to 12 show rooms in different parts of the city. And women just will shop around!"

That is the way C. F. Farley, vice president of the Kansas City Power & Light Co., and the 12 distributors who form the Kansas City branch of the Electric Refrigeration Bureau reasoned when they joined forces to put on a collective demonstration.

The result was the Electrical Refrigeration Show and Cooking School held in the Transportation Building of the Power and Light Co., April 13 to 19. Five hundred forty electric refrigerator sales were sold during the show, and 3,000 prospects listed.

An incentive (the cooking school) to draw the crowd was decided upon; advertising was arranged for; the comfort of visitors was considered; a background best suited for refrigeration display was prepared; an atmosphere pleasing to home-loving women was created and 12 individual sales teams were groomed for intensive work; all these component parts of the campaign combined to produce the result.

Five Cold Cookery Sessions

"We could have easily used the five cooking sessions for refrigerator cookery alone," states Miss Lorraine McKiddy, advertising manager for the Power & Light Co., "but we did not deem it advisable to do so."

"Women do not yet realize the possibilities of electric refrigeration cookery; hot food is a very necessary part of almost all meals; and by demonstrating both cooking and refrigeration, our school had a much wider appeal."

"We brought in the best instructors we could find anywhere. On Tuesday and Wednesday Miss Clara Dean, superintendent of the home economics for General Electric in Chicago, spoke. Thursday and Friday, Miss Alice McCarren, superintendent of the home economics service for Westinghouse Electric and Mfg. Co., Mansfield, Ohio, lectured. Saturday, Miss Celia S. Bushhome, economics director for the Estate Stove Co., Hamilton, Ohio, demonstrated."

"Jack Murphy, of the Sterling Radio Co., of this city gave a chart lecture, 'Food Spoilage.' Two refrigerators of different makes were used on the stage, and were changed daily."

"Our school over-ran its capacity of about 200 every afternoon," says Miss McKiddy. "Between 1,500 and 2,000 saw the exhibit daily."

"Nothing was forgotten that might add to the comfort of the visitors; a drinking fountain was nearby; a rest room was provided; printed programs each day had all of the recipes used in the demonstrations and courteous salesmen in every booth explained each machine in detail."

The old excuse, "We want to look around a bit further," did not get far. The "looking" was good, and the prospect was encouraged to indulge in it.

"What other make did you have in mind, Madam?"

"Well, perhaps the ——— or the ———"

"All right, Madam. You will find the ——— two booths back and the ——— just across the aisle, and we'll be glad to see you again!"

In addition to the 540 sales made 3,000 prospects were listed, 739 of which will be closed within 30 days.

"Why," exclaimed one distributor, "in addition to our more than a hundred sales, we put over 700 real prospects' names on our lists."

The Kansas City branch of the Electric Refrigeration Bureau, of which Mr. Farley is division chairman, is enthusiastic about this, their first co-operative effort.

EASTERN UTILITY ADDS G. E. COMMERCIAL DEPARTMENT

KINGSTON, Pa.—The Luzerne County Gas and Electric Corporation here is setting up a separate commercial department to promote sales of General Electric commercial refrigerators during 1931.

The principal central display of the commercial models will be located in Kingston, although other displays will be installed in other sections.

ALBANY OUTLETS FRANCHISED

ALBANY, N. Y.—Two new refrigeration dealers have recently been appointed by Majestic Distributors, Inc., of this city, announces Joseph W. Doyle, branch manager. Ward S. Lent, Poughkeepsie, and the Albany Builders Supply Co., Albany, are the new Majestic dealers.

NAMED SALES REPRESENTATIVE

BOSTON—Ayers-Lyon Corp., Cope-land factory representative, has been recently appointed New England sales representative for the Sprague Specialties Co. of Quincy and North Adams, Mass.

MIAMI CO. ADVANCES STAR G. E. SALESMEN

MIAMI, Fla.—Coincident with a change in the name of the Miami Electric Refrigeration Co., distributors of General Electric refrigerators, to George Patterson, Inc., of Miami, was the announcement that Jack Justice, Jr., had been appointed manager of the local offices.

Mr. Justice has been identified with General Electric refrigerators since their inception, having been connected



Jack Justice

with the Philadelphia distributor before coming to Florida.

In 1930 he sold \$41,000 worth of General Electric refrigerators, more than any other salesman in the state.

Except for the change in firm name and Mr. Justice's promotion, the executive personnel of the staff distributing organization remains unchanged.

A new delivery truck has been added to the equipment of the organization.

TWO TEXAS COMPANIES TO REPRESENT WESTINGHOUSE

DALLAS, Tex.—The Westinghouse Electric Supply Co. has appointed Fakes & Co., and Fred R. Gamble, Inc., as Dallas dealers for Westinghouse refrigerators, according to E. I. Jones, manager of the refrigeration department of the Westinghouse company.

Fakes & Co. is one of the largest furniture dealers in Texas and will organize a refrigerator sales force of 12 to 15 salesmen for local operation. Max Crossman will be in charge of sales.

Fred R. Gamble, Inc., operates two retail stores, the Oak Lawn Radio Shop, 3400 Oak Lawn Ave. and Gamble's Radio Shop, 111 W. Jefferson Ave.

The Ft. Worth store of Fakes & Co. will also serve as dealer in that city for Westinghouse refrigerators.

OFFER WITH EACH SALE

BELLFONTE, Pa.—With every sale of an Electrolux refrigerator or a gas range, the Central Pennsylvania Gas Co. offers to refinish the purchaser's woodwork to match the equipment, letting her choose her own color scheme, and having everything blended to harmonize.

The duco work is handled by members of the organization, requiring only the services of a local painter for the woodwork, states F. Murphy, vice president and general manager. The cost per kitchen varies from \$6.00 to \$12.00.

PATERSON HOLDS TWO-DAY REFRIGERATION SHOW

PATERSON, N. J.—Six dealers had exhibits at the Electric Refrigeration Show held at the Hamilton Hotel here recently under the auspices of the Paterson Electric Refrigeration Bureau.

Exhibiting at the show were: Heat and Cold Equipment Co.; S. O. S. Radio Stores; Frank Whitehead, Inc.; Public Service Co.; Van Dyke Furniture Co., and the Quackenbush Co.

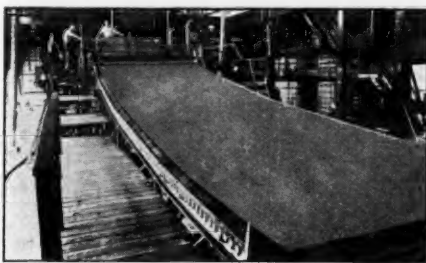
The show which ran for two days was open from 2:30 in the afternoon to 11:30 at night.

NEWARK RADIO DISTRIBUTOR TAKES MAYFLOWER LINE

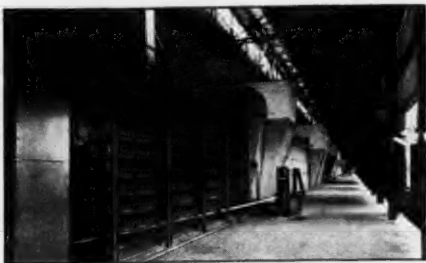
NEWARK, N. J.—Mayflower electric refrigerators were recently taken on for distribution by the Naedele-Janney, Stewart-Warner distributor.

A school, held recently in New York city, for dealers and mechanics was attended by nearly 125 dealers from the metropolitan area.

W. M. Meyers, treasurer, and F. C. Geller, chief engineer, both officials from the factory, were present, and C. H. Grandstaff, sales manager of Trupar in the metropolitan territory, presided.



Temlok insulating boards at the Pensacola plant are fabricated from the heartwood fibre of Southern Pine.



Boards are delivered automatically to the eight sections of the dryer.



Temlok boards 16 feet long by 12 feet wide automatically pass through two sets of saws to provide any rectangular shape.



This photograph shows a storage room at the Temlok plant. Note the strong, accurately sawed insulating boards.

Temlok insulated refrigerators give BETTER VALUE AT LOW COST

MANUFACTURERS realize that to be successful in 1931 it is necessary to build into their product greater value at an equal or reduced cost. Armstrong's Temlok, the new low-cost fibre board insulation offers makers of refrigerators a practical way to meet this problem.

Temlok, fabricated from the heartwood fibres of Southern pine, gives extra value. Temlok has a low coefficient of thermal conductivity, light weight, rigidity, structural strength, and it is sterile and odorless. In addition to these essential qualities, and of great importance, is Temlok's unique resistance to moisture.

Temlok is Permanently Efficient

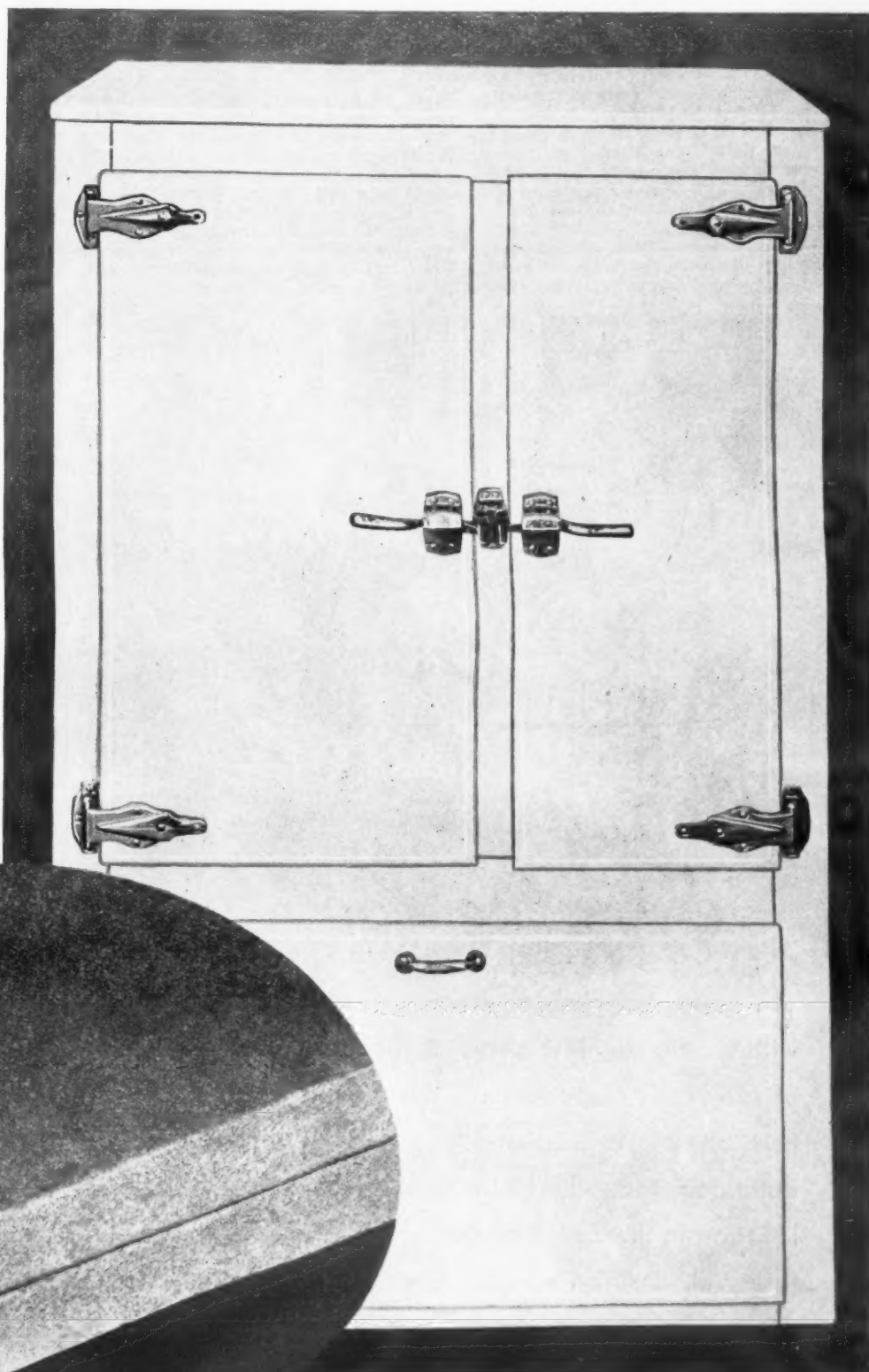
Fabricated from resin-impregnated fibres of Southern pine, Temlok resists moisture permanently—provides lasting efficiency. Despite this greater value, Temlok costs no more.

Temlok offers to the manufacturer of household refrigerators, at low cost, an insulation that insures greater consumer satisfaction. Cut to size, Temlok can be furnished in any thickness for easy and economical installation. Important, too, from a merchandising standpoint is the fact that Armstrong is nationally known as the manufacturer of superior insulations and high quality floor products.

We'll be glad to send you complete information about Temlok and samples of this new and better insulation. Armstrong Cork & Insulation Company, 917 Concord Street, Lancaster, Pennsylvania.



Especially fabricated from the heartwood fibres of Southern pine to meet the needs of the domestic refrigerator industry, Armstrong's Temlok Refrigerator Insulation is furnished in solid-inch and half-inch thicknesses and in built-up layers as desired. Temlok is available cut to size to provide custom-made board.



Armstrong's Temlok Refrigerator Insulation has a low coefficient of thermal conductivity, light weight, rigidity, ample structural strength for every requirement, exceptional resistance to moisture, and is sterile and odorless.

Armstrong's Temlok

Low-cost, efficient insulation for refrigeration

BUSINESS IN TEXAS SHOWS IMPROVEMENT

By Kathryn Maddrey

DALLAS, Tex.—Forty per cent increase in business in the last three months as compared with the same period in 1930, is reported by the Dallas Copeland Co., Inc., distributor for Copeland in 40 counties in northeast Texas and Oklahoma, according to H. W. Cline, manager.

At present the Dallas Copeland Co., Inc. has a sales force of fifteen. Plans for the addition of 10 salesmen to the force have been announced.

"There is considerable new building going on in Dallas and apartment house installations are receiving more attention and provide a good demand," Cline said. "There is a good market for electric refrigeration systems among independent grocers and stores. The independents are waking up and are providing their stores with the latest equipment, such as is generally found in the chain store organizations.

"There has been a decided increase in applications for dealerships from widely diversified business classifications.

"Within recent months we have installed electric refrigeration in seven large dairies in northeast Texas. One of these had its own ice making plant and was selling ice at 10 cents a hundred.

"There is a very urgent need in Texas for more stringent laws regulating dairies," Cline believes.

However, he thinks public demand for more sanitary conditions is forcing dairies to give more heed to the equipment used. The large dairies are realizing this, he said, and are rapidly improving their plants.

"During the past year we have seen many shake-ups in the kinds of dealers handling electric refrigeration," Cline

Department Store Sells Eight Makes of Refrigerators



Prospects attending the recent refrigeration show of J. L. Hudson & Co., Detroit, had the opportunity to inspect some 60 models of eight nationally known makes.

said. "For instance, we used to think department stores did not make good dealers. This has changed. They are accustomed to getting the public to the store, and they have learned that to effectively sell electric refrigerators it is necessary to go out to the customer. "This is well illustrated by a recent experience. We made an installation for a prosperous dairyman living within sixteen miles of our office who had

not been to Dallas in nine years. Department stores are now among our best dealers, as are music stores and automobile concerns when the business is properly departmentalized."

He finds that families are buying higher priced models than at any time in the past.

So far as the Southwest is concerned, Mr. Cline says the business is here if salesmen go out and work to get it, but work is necessary, for he says, "I know of no product unsold other than electric refrigerators for which the public has evinced a desire which requires so much selling."

ST. LOUIS DEALERS FORM REFRIGERATION BUREAU

ST. LOUIS.—Dealers and distributors of electric refrigeration in this vicinity have organized the Electric Refrigeration Bureau of St. Louis, for local participation in a nation-wide campaign, sponsored by the National Electric Light Association, to promote the use of electric refrigeration for food preservation in the home.

Charles E. Michel, sales manager of the Union Electric Light and Power Co. and member of the executive committee of the National Electric Refrigeration Bureau, is chairman of the local committee.

A. C. Brandt, president of the Brandt Electric Co., J. C. Chambers, sales manager of the Del-Home Light Co., L. D. James, president of James & Co., and R. C. Houck, manager of the Kelvinator Sales Corp. are members of the local committee.

A meeting of the bureau was held at the Hotel Jefferson, April 28, at which plans were formulated for the local campaign to be conducted during the months of May and June.

The campaign will be under the direction of Arthur E. Schanuel, vice president of The Hart Vance Advertising Co., and former president of the Advertising Club of St. Louis. Headquarters have been established at 207 Union Electric Building.

POUGHKEEPSIE DEALER NAMED

POUGHKEEPSIE, N. Y. — Shaker, Travis & Quinn, Inc., has been named representative for the Copeland refrigerator in this city and Wappingers Falls.

Summer Days Are Comfortable... Here

SUMMER days in Chicago are comfortable... at THE DRAKE. Comfortable... spacious... airy Pleasant... an ideal location overlooking Lake Michigan... Beach, bridge paths... Lincoln Park... and other attractions... immediately accessible. Rates begin at \$5 per day. Permanent Suites at Special Discounts.

THE DRAKE HOTEL, CHICAGO
Under Blackstone Management

"AN ADDRESS OF DISTINCTION"

MEYBERG COMPANY TAKES NORGE DISTRIBUTORSHIP

DETROIT—The Norge Corp., a division of Borg-Warner Corp., announces the appointment of Leo J. Meyberg Co., 70 Tenth St., San Francisco, as Norge distributor for northern California.

Through its R C A-Victor radio activities, this firm has built up an organization of 2,000 dealers in northern California, and has made good sales records in the radio field.

"We have found that the desire to own an electric refrigerator is very strong among low-income families who consider it an economical necessity as well as a pleasure-giving luxury," says A. H. Meyers, president.

"We have interviewed a number of housewife groups of all income levels with the invariable result that while 10 per cent of them already possess an electric refrigerator, fully 60 per cent of the remainder have decided to purchase but have not made up their minds as to which make to buy. This convinces us that a large active market now exists and we have decided to enter the field in a big way."

TRESTRAIL CORP. HANDLING MAJESTIC IN CANADA

MONTREAL—Dealers to handle the Majestic refrigerator are being appointed in many Canadian provinces by the Trestrail Corp. of this city, distributor for the Majestic product.

On account of the Hydro-Electric System at Niagara supplying only 25 cycle current, for which no Majestic models are ready as yet, the activities of the Canadian distributor have been concentrated in the Province of Quebec, the Maritime provinces and the West, all having 60 cycle current.

F. A. Trestrail heads the company bearing his name. Branch offices are maintained at Toronto and Vancouver, with warehouse facilities at Winnipeg.

C. I. T. OPENS BRANCH OFFICE AT BAY SHORE

NEW YORK CITY—Due to increase in business on Long Island, the Commercial Investment Trust Corp. has established an office at Bay Shore in the First National Bank and Trust Bldg., to give localized service to dealers and purchasers in Suffolk County.

Since the beginning of this year, C. I. T. has opened offices in Beckley, W. Va., New Haven, Conn. and Hagerstown, Md., and now has more than 140 branches in the United States and Canada.

DEALERS IN TEXAS CONVENE

DALLAS, Tex.—The Dallas Copeland Co., north Texas distributor for Copeland, held a dealer sales conference here May 4. Dealers throughout the territory attended the meeting.

WE BUY
New and Used **ELECTRIC REFRIGERATORS**
In Any Condition

Phone, Write or Wire All Details,
Type of Motor, Size of Box, Etc.

KASKEY & QUINN, Inc.
525 Arch Street Philadelphia, Pa.

DEALERS COOPERATE IN 7,500 UNIT DRIVE

By C. W. Geiger

SAN FRANCISCO—By means of an electric refrigeration show, increased advertising and participation of employees in a sales contest, the Pacific Gas & Electric Co. plans to add 7,500 electric refrigerators to its power lines during the 75-day campaign which is now underway.

The electric refrigerator show now being held under the auspices of the company in cooperation with the refrigerator dealers is attracting large crowds daily.

Dealers and distributors cooperating with the utility company in the display are:

Thor Pacific Co. (Copeland); H. R. Curtiss Co. (Servel); Sherman Clay & Co. (Kelvinator); Trupar Mfg. Co. (Mayflower); Thompson & Holmes, Ltd. (Majestic); Kimball-Upson Co. (Majestic); Frigidaire Sales Corp., and the L. H. Bennett Co., Ltd. (General Electric).

Twenty-four electric refrigerators are displayed at the show. Decorations of the exhibition room and the special lighting system have been combined to produce an Arctic setting.

The display is in charge of Miss Anna Shadle Peterson, home economist, who is assisted by a staff of refrigerator salesmen.

Similar displays on a less elaborate scale are being made in approximately 75 offices of the company in northern and central California. These displays are a part of the "A. F. Hockenbeamer Electric Refrigerator Plan," which went into effect April 16. This is said to be the most comprehensive cooperative, central station-dealer campaign in the history of the company.

A special feature of the campaign is the "Employee Purchase Plan." Each of the 16,000 P. G. & E. employees will also endeavor to interest prospects outside of their own family to buy an electric refrigerator during the 75-day period.

To arouse interest, a contest, with a baseball atmosphere, is being conducted. The league is composed of twelve teams, one for each division. Each week, commencing April 16 constitutes an inning which will make a game of eleven innings. Every employee can play on his divisional team and runs, hits, strikes and balls will be counted as follows:

Home Run—A refrigerator sale by dealer to a prospect submitted during campaign. (Excepting employee purchases).

Run—Purchase of a refrigerator by an employee.

Hit—Refrigerator prospect accepted by agency.

Ball—Refrigerator prospect accepted by some agency or agencies and rejected by one or more. (Four balls equivalent to one hit).

Strike—Prospect rejected by all dealers.

Foul Ball—Prospect reported by dealer as disinterested and indifferent—not really constituting a prospect.

Special prizes, one for the player on each team making the greatest number of runs and one for the player on each team registering the highest number of hits and balls, together with a grand prize for high run player of the league, and pennant for high run team of the league will be awarded.

In the case of a tie, home runs will rate over runs and hits over walks. Other ties will result in division of prizes.

Standing of players and teams will be broadcast during the seventh inning "stretch" and after close of contest.

Twenty-five cash prizes will be awarded. In this campaign all employees of the company, except sales department employees, are entitled to compete for prizes.

A large business builder pennant will be awarded to the team representing the division in which the highest percentage of the total division bogey is attained.

One share of P. G. & E. first preferred 5½ per cent stock will be awarded to the player in the league who, by reason of purchase for his own use and/or because of sales by dealers from prospects submitted by him during campaign, is responsible for the greatest number of runs.

Ten dollars in gold will be awarded to the player on each team who is responsible because of his cooperation as outlined in preceding paragraph, for the greatest number of runs made by his team.

Five dollars in gold as second prize will be awarded to the player on each team who has credited to him the greatest number of hits and balls.

A total of 324 newspaper advertisements will be run in 40 dailies during the spring campaign period. To tie in with the newspaper advertising, bill stickers will appear on 500,000 P. G. & E. gas and electric bills to be mailed in May.

TO REPRESENT WESTINGHOUSE

SOUTH NORWALK, Conn.—The A. J. Collins Co. has been appointed Westinghouse refrigerator dealer for Norwalk and vicinity.



... where tempting and delicious dishes are served without the slightest delay and where the privilege of privacy is respected... is a service that Hotel Fort Shelby is particularly proud of. ¶ You'll be delighted, too, with Hotel Fort Shelby's insuperable location in the heart of Detroit's shopping, theatre, financial, insurance and wholesale districts. No other large hotel in the metropolitan area is so near the principal railway terminals, airports and

steamship piers. ¶ All of Hotel Fort Shelby's 900 units have servitors... and private bath. Rooms as low as \$3.00 per day... suites \$10.00 and upwards.



Motorists are relieved of their automobiles at the door without service charge. Write for free road map, and your copy of "Aglow with Friendliness," our unique and fascinating magazine.

Hotel Fort Shelby
"AGLOW WITH FRIENDLINESS"
E. J. BRADWELL, Manager
DETROIT

Leonard Dealers Prepare For Spring Sales



SPECIAL APPEAL, CHANGES IN DISPLAY HELP SALES

By Charles B. Barr

NEW HAVEN, Conn.—Constant change of window displays has proved a consistent business-getter for Modern Home Utilities, Inc., General Electric refrigerator dealer, according to Miss Johnstone, assistant manager. Displays are changed weekly, with a special effort made to emphasize seasonal interest.

The Modern Home Utilities store is located near the heart of the shopping district, and pedestrian traffic is heavy at all hours. As there is but one display window, the exhibit is generally of an arresting nature in order to attract attention in a neighborhood abounding in well-dressed windows.

Miss Johnstone frequently scours the shopping district to secure small dolls and other novelties to dress the exhibit. While the display is completely changed every week, the major effort is concentrated on holidays. This does not mean the Fourth of July, Thanksgiving and Christmas, but all holidays, even of minor importance.

Two of the outstanding displays this spring were for St. Patrick's Day and Easter. The St. Patrick's Day motif was, of course, green, but a large number of objects were used instead of merely filling the window with green streamers. Shamrocks, flowers, Irish boy and girl dolls, green pigs and so forth were to be seen, all arranged so that it took the eye some minutes to inspect everything.

The effectiveness of the Easter display, which featured the customary rabbits and lilies, was demonstrated by the fact that two buyers insisted on having the very refrigerator shown in the window, refusing to accept an exact duplicate from the floor, according to Miss Johnstone.

That business is actually on the upgrade, materially assisted by the display policy, was shown by Miss Johnstone's statement that more refrigerators were sold during the week ending March 28 than in any one week since the concern opened its showroom four years ago.

THREE PROVIDENCE COMPANIES MOVE TO NEW QUARTERS

PROVIDENCE—Three local refrigeration companies have recently taken larger quarters.

Gentsch & Thompson, Inc., has closed the office and salesroom at 155 Broad St., and has opened a new store at 155 Mathewson St., in the shopping center of the city. D. Schaefer is manager.

The Copeland Refrigeration Co. has moved its sales office from 159 Broad St. to 299 Broad St.

General offices of the local branch of the Frigidaire Sales Corp. of New England have been moved from Hathaway St. to 37 Exchange Place.

The C. & K. Electric Co. has sold a 17 cu. ft. Westinghouse electric refrigerator to the Homeopathic Hospital in Providence. The hospital formerly used ice refrigerators.

WALKER DIRECTS BUREAU AT BOISE, IDAHO

BOISE, Idaho—Roy L. Walker, of the Walker Electric Co., Kelvinator distributor here, is chairman of the Refrigeration Bureau of Boise.

The bureau staged a refrigeration show recently at which a number of dealers had large displays.

WOODS ACCEPTS POST WITH DALLAS COMPANY

DALLAS, Tex.—J. F. Woods, who has been southwestern zone representative for Copeland with headquarters in Dallas, has joined the personnel of the Dallas Copeland Co., Inc.

Mr. Woods succeeded H. W. Cline as factory representative when the latter went with the Dallas distributing company.

Sales plans for the spring months were presented at a recent conference of Leonard electric refrigerator dealers in St. Louis. The Tiemann Store and Hardware Co., distributor, was host to the dealers. Officials of the Leonard factory, headed by A. H. Jaeger, spoke at the meeting.

WELLMAN TAKES DEALERSHIP IN NEW HAVEN

TORRINGTON, Conn.—A. B. Wellman, veteran Main St. refrigerator dealer, has been enlisted in the Copeland ranks by the New Haven Electric Co., Copeland distributor for Connecticut. Announcement of Wellman's appointment was made by C. F. Ganter, refrigeration manager for the New Haven firm.



resenting



MOHAWK

REFRIGERATOR

WITH THE DUOZONE UNIT

◆ REFRIGERATION'S LATEST AND GREATEST ADVANCE ◆

A Timely Opportunity to Increase Profits . . .

A tremendous profit return awaits jobbers and dealers who go after the refrigerator business, this year, with the Mohawk line.

Mohawk Electric Refrigerators give you practically every sales feature which other makes present as "strong points"—and then, *Mohawk adds that great, exclusive advantage—the Duozone unit.*

Think of the selling force of the Duozone argument: two separately controlled zones of cold—one for freezing ice and desserts, the other for safe cooling of the storage compartment. Dehydration is cut to a minimum—no special compartments required to protect moist foods. Moisture stays in; food flavors are preserved.

Jobbers and dealers all over the country have already grasped the Mohawk Franchise as the year's biggest refrigerator opportunity.

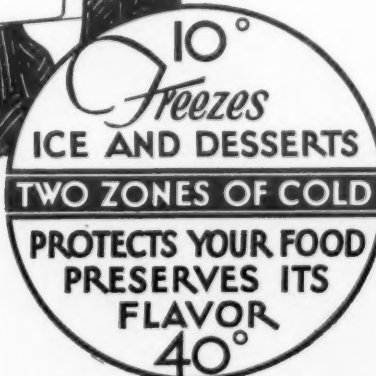
Radio dealers have been quick to see the possibilities of filling in the summer sales gap by putting their selling effort behind Mohawk Refrigerators.

Your territory may still be open. Write us, today, for complete information.



The DUOZONE UNIT

as its name implies, provides two zones of cold, the greatest forward step in food protection and flavor preservation in the past decade.



A COMPLETE LINE OF 5 MODELS BEGINNING WITH THE FIVE FOOT BOX SHOWN ABOVE.

ALL COVERED BY
3 YEAR
GUARANTEE

WRITE FOR INFORMATION
ABOUT MOHAWK'S LIBERAL DEALER FRANCHISE

Made by the ALL-AMERICAN MOHAWK COMPANY, NORTH TONAWANDA, N. Y., Manufacturers of LYRIC RADIO

FORTY NEW ENGLAND MANAGERS CONVENE

SPRINGFIELD, Mass.—Forty managers of Westinghouse refrigerator dealer organizations in western Massachusetts and southern Vermont attended a Spring sales conference held by the Wetmore-Savage Co., at Hotel Kimball, May 4.

The afternoon was devoted to an educational and sales meeting with a detailed discussion of points related to the line.

At the dinner meeting in the evening addresses were made by R. P. Wise, manager of the refrigeration department; T. J. Phillips, sales promotion manager for refrigeration, and Harry Gould, publicity manager of the department, all of the Wetmore-Savage Co., Boston, and E. H. Nordine, manager of the refrigeration department of the Springfield branch of Wetmore-Savage. J. Edward Hall, branch manager, presided at the sessions.

Announcement was made of the appointment of two new dealers: Cavazia & Montagna of North Adams, Mass., and J. T. Tracy of Great Barrington, Mass.

ILLINOIS UTILITY SELLS 212 UNITS IN CAMPAIGN

DECATUR, Ill.—The Illinois Power & Light Corp. recently conducted a 60-day General Electric refrigerator sales campaign with an objective of installing 176 refrigerators. The campaign has just closed with total sales of 212 units, or 162 per cent of quota.

The selling of approximately \$50,000 worth of refrigerators, which would increase kilowatt hour consumption about 109,000 hours, was the original idea of the utility; but the gross sales revenue amounted almost to \$82,000, and kilowatt hour consumption has been increased 131,040 hours.

I. R. Abbott, division manager, and M. S. Bandoli, commercial manager, report that the campaign was the result of three months' preliminary effort.

COMBINATION UNIT FEATURED AT BROOKLYN FOOD SHOW

BROOKLYN, N. Y.—The "Kitchen Kompact" in which an Electrolux refrigerator, a gas range, kitchen cabinet, sink, work table and storage cabinets are built into one unit, was displayed by the Brooklyn Union Gas Co. at the 40th annual Brooklyn Food Show.

Exhibited at this show by the gas company were two types of the Kitchen Kompact, both designed to use the Electrolux. One type is constructed so that it must be sold as a unit, and the other is designed so that parts may be purchased at any time, and still fit the sections together into a unified whole.

The Kompacts occupied the center portion of the gas company's display, forming a "V" projection. Five booths were filled and located in an advantageous position near the main entrance.

Approximately 125 Brooklyn firms exhibited their products, and more than 50,000 persons visited the Food Show during the two weeks.

BUFFALO FURNITURE STORES ACQUIRE NORGE FRANCHISES

BUFFALO—W. Bergman Co., distributor of Norge refrigerators, announces two new dealers, the Household Outfitting Co., Huron and Washington Sts., and Bing & Nathan, Inc., Main and Mohawk Sts. Both are retail furniture stores.

Guenther, Walters Direct Electrolux School



Employees of the Iowa Railway and Light Co. who attended the sessions at Ames

REQUESTS FOR INFORMATION

Readers who can be of assistance in furnishing correct answers to inquiries, or who can supply additional information, are invited to address Electric Refrigeration News, mentioning query number.

Electric Refrigerator

Query No. 413—"Will you kindly advise if the American Electric Corp. of New York City is still in business?"

"This firm made the Electric refrigerator and if it is no longer in business, I am desirous of knowing where I can obtain a service manual and repair parts for this machine."

Cooling System for Trucks

Query No. 414—"We build refrigerator truck and trailer bodies, which have thus far used either natural ice or 'Dry Ice' as refrigerant."

"If any manufacturer has a mechanical refrigerating plant that could be installed and operated in truck and trailer bodies, we would like to learn details."

"We are building for Armour & Co., Wilson & Co., Geo. A. Hormel & Co., Albert Lea Packing Co., F. M. Sinclair Co., and other packers and sausage manufacturers."

Bakelite Knobs

Query No. 415—"We have been endeavoring to locate Bakelite knobs used for holding up refrigerator shelves, such as are used in Norge cabinets. We would appreciate hearing of some source of supply."

Finance Companies

Query No. 416—"Will you be good enough to advise us the names of finance companies who would be likely to purchase electric refrigeration contracts other than C. I. T., Commercial Credit Co. and Refrigeration Discount Corp. These three names we already know."

NEW DEALER IN AMARILLO

AMARILLO, Tex.—The Williams Hardware Co. has added the Westinghouse refrigerator line.

TWO DAYS DEVOTED TO EDUCATIONAL MEETINGS

AMES, Iowa—Some 30 representatives of the Iowa Railway and Light Co. recently attended the Electrolux sales and educational school held here recently.

Classes were continued for two full days under the direction of R. R. Guenther, district sales engineer, who was assisted in the arrangements by Perry Walters, sales manager for the Iowa Railway and Light Co.

Eleven different cities and towns were represented at the meetings. Those registering for the school are pictured here:

First row (left to right)—W. T. Goodwin and F. E. Patton, Vinton; W. Y. Cleveland, Nevada; Seward Berhow and Howard S. McGriff, Ames; R. H. Ames and Ralph M. Butler, Nevada; Errol Roberts, Storm Lake; and Ivan H. Ziegenbusch, Cherokee.

Second row—Herbert P. Ives, Perry; C. G. Peterson, and Allen F. Payne, Charles City; Perry Walters, Ames; S. E. Egeland, Story City; Charles C. Ridgour, Belle Plain; Carrel Sills and J. G. Graffitt, Ames.

Third row—D. M. Durst, Nevada; J. H. Ainsworth, Ames; D. V. Wells, Harold L. Morton, Carroll; R. R. Guenther, J. G. Squires, H. E. Bennett, Cherokee; T. M. Holm, Story City; and George B. Tucker, Marshalltown.

SIXTEEN FRIGIDAIRE S SOLD AT PORTLAND SHOWING

PORTLAND, Me.—More than 700 persons were attracted to the Spring showing at the Portland branch of the Frigidaire Sales Corp. of New England. Sixteen household cabinets were sold in six days following the insertion of an advertisement offering a glass table water server free to anyone who would fill out a coupon and bring it to the salesrooms.

The showroom and offices of the Portland Frigidaire branch have been moved from Congress St. to 186 State St.

The L. W. Cleveland Co., 441 Congress St., dealer in electrical appliances, has been appointed associate dealer in Portland. Erwin E. Emmons is manager of the Frigidaire department.

ATLAS JOINS BOSTON COMPANY AS SALES MANAGER

BOSTON—Refrigeration Sales & Appliance Corp. announces the appointment of Maurice Atlas as sales manager of the Copeland division for the Boston metropolitan area.

Atlas was formerly connected with the Copeland New England distributor, contacting dealers in southern Massachusetts and Rhode Island, and performed similar duties for Copeland distributors in Minnesota and Wisconsin before coming east.

All departments of the Copeland division show improvement, reports Mr. Atlas. An increase of more than 180 per cent in sales for the first quarter of this year over the corresponding period in 1930 has been made by the commercial department.

COLOR DRINKING FIXTURES GAINING POPULARITY

EVERY day the demand for color in drinking water fixtures increases. This is particularly true, according to Ray Douglas, of the Liquid Cooler Corp., of wall and pedestal fixtures as used in office buildings in multiple installations. The choice of color, as indicated by recent orders, has been for such tints as buff, green and canary. A jet black finish has also been greatly in demand.

THE CONDENSER

ADVERTISING RATE fifty cents per line (this column only).

SPECIAL RATE if paid in advance—Positions Wanted—fifty words or less, one insertion \$2.00, additional words four cents each. Three insertions \$5.00, additional words ten cents each. All other classifications—fifty words or less, one insertion \$3.00, additional words six cents each. Three insertions \$8.00, additional words sixteen cents each.

POSITIONS AVAILABLE

APARTMENT House Supervisor wanted for Boston territory with one of leading companies in the industry. Capable man, honest, sincere and hard worker will have an unusual opportunity to earn real money. State in full experience during past five years. Applications held in strict confidence. Box No. 328.

SALESMEN for exclusive open territories to call on dealers of refrigerators, with a reliable line of refrigerator display material. Very attractive straight commission basis. Write selling experience and names of last two employers. Realistic Displays, Inc., 266 Fabian Place, Newark, N. J.

POSITIONS open for installation and service men, on methyl chloride machines. Good jobs for good men, who understand their work. Marsden's Store Fixture House, Inc., James St., East Providence, R. I. (established 1895).

POSITIONS WANTED

REFRIGERATION Engineer, A. S. R. E. member now employed, seeks new connection with aggressive concern. Familiar with sulphur dioxide and methyl chloride, modern technique and costs, of domestic and small commercial refrigeration equipment. Capable of taking full charge of designing, sales, service, manufacturing or experimental departments. Age 35. Box 325.

GRADUATE of National Technical Institute, Cleveland, desires connection as service man. Commercial or domestic refrigeration units; also experienced in electrical maintenance. Married. Age 36. Salary no object. South or East preferred. Riggs, 217 N. 12th St., Wilmington, N. C.

EQUIPMENT FOR SALE

FORMER Copeland distributor in Eastern city has for sale 11 Copeland 1930 Model E bottle-type water coolers in original factory crates and 6 Type 88-C and 1 Type 8-C. S. D. Larkin Coils. Reasonable offers for immediate delivery are invited. Box No. 329.

WANTED

An opportunity to talk to a responsible manufacturer who would be interested in the manufacture and sale of two products of exceptional merit with unlimited markets.

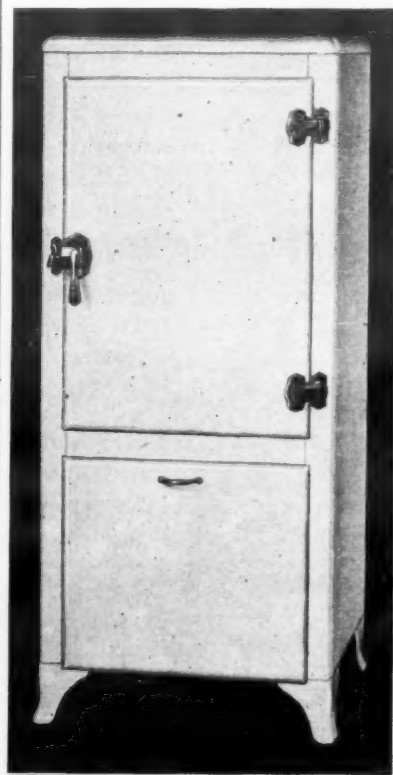
A totally enclosed commercial refrigerating unit of 1/4-ton capacity. Service elements eliminated, small floor area required—very low head room. Completely developed, designed and constructed in accordance with the latest and best engineering practice.

An all electric unit heater—low temperature, high efficiency operation. Three big markets: Household, architectural, industrial. Has been on the market for six months. Thoroughly tried. Highest rating by recognized engineer.

These two products complement each other both as to manufacturing and seasons. Inquiries solicited. Only strong, well-financed concerns should consider.

Reply Box No. 327

THE NEW STARR FREEZE Electric Refrigerators for 1931



of Outstanding Beauty Utmost Reliability Incomparable Value

One of the New Styles

The Wabash

MODEL W

Three tray cooling unit. Approx. 5 cu. ft. gross Interior Porcelain. Exterior Enamel.

Our Liberal Dealer Proposition

is an unusual story of profit for you. Write at once for it.

THE STARR COMPANY RICHMOND, INDIANA

SUBSCRIPTION ORDER

Electric Refrigeration News
550 Maccabees Building
Detroit, Michigan

Gentlemen: Please enter my subscription to ELECTRIC REFRIGERATION NEWS.

United States and Possessions: ☐ \$2.00 per year ☐ Three years for \$5.00
All other Countries: ☐ \$2.25 per year ☐ Two years for \$4.00
Refrigerated Food Section only \$1.00 per year.

I am enclosing payment in the form of ☐ Check ☐ P. O. Order ☐ Cash

Name.....

Attention of or Care of.....

Street Address.....

City and State.....

Special Rates for Group Subscription Orders

For paid-in-advance subscriptions in United States only. Send check with order. Papers will be mailed to individual addresses.

5 or more subscriptions entered at one time, \$1.75 per year each.

20 or more subscriptions entered at one time, \$1.25 per year each.

10 or more subscriptions entered at one time, \$1.50 per year each.

50 or more subscriptions entered at one time, \$1.00 per year each.

Refrigerated Food Section

ELECTRIC REFRIGERATION NEWS

Registered U. S. Patent Office.

The business newspaper of the refrigeration industry

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TWO DOLLARS PER YEAR

CHERRY GROWERS OPEN STORE IN CHICAGO MARKET

Associations Establish 'Hut' To Promote Cherry Sales

By George F. Taubeneck

CHICAGO—Everything in red and white, including brightly costumed and brightly smiling attendants. Cherries, cherries, cherries. Take home a pound of frozen cherries—just a quarter. Many varieties of canned cherries. Lucious cherry pies, made today, for 20 and 60 cents each. All kinds of cherry dishes and cherry concoctions. And to make a complete lunch, coffee, sandwiches, salads, chicken pot pie.

Squeezed into a tiny cubby-in-the-wall at 20 West Lake St. is the Cherry Hut. It is sponsored by the Fruit Growers Union of Sturgeon Bay, Wis., and the Michigan Cherry Growers, Traverse City, Mich. These organizations want to promote the year-round consumption of cherries.

Chicago, they believe, needs education in the use and food value of cherries. So the Cherry Hut was established to show Chicago housewives how cherries can be employed in the day's bill of fare, and to show Chicago menfolk just how good hot cherry pie can be—when it is made from frozen tree-ripened Michigan cherries.

"Behind the bar" of the Cherry Hut is a large Copeland household electric refrigerator, easily seen and constantly used. Underneath the "bar" is an ice chest.

Growing every week is the patronage. At luncheon time the white booths and

(Concluded on Page 8, Column 1)

LOWER MEAT PRICES REPORTED FOR APRIL

CHICAGO—Declines in the wholesale prices of dressed beef featured the meat trade during April, according to the Institute of American Meat Packers. Prices of smoked and fresh pork products were fairly steady, but all cuts of pork and beef are now wholesaling at levels substantially lower than those prevailing at this time a year ago.

A comparison of prices of some meats at the close of April with those of the same period last year show the following declines: Dressed beef, from 27% to more than 32% lower at wholesale, according to grade and weight; veal, 27% lower; fresh pork loins, from 10% to more than 15% lower, depending on weight; smoked hams, 14 to 20% lower, and smoked picnic about 30% lower.

Export trade in April was not quite as large as the March trade, and on the Continent prices of most products declined as compared with the previous month.

BIRDSEYE, COMMERCIAL CREDIT ARRANGE CASE FINANCE PLAN

BOSTON—Food retailers who want to sell Birdseye Frosted Foods may now purchase low temperature display and storage cases on the installment plan, in accordance with a contract made between the Commercial Credit Co. and the Birdseye Packing Co., Inc., a subsidiary of General Foods Corp.

All equipment purchased under the terms of this plan have the approval of Birdseye officials, and must be used only for the storage of quick-frozen

foods sold under the Birdseye trademark.

A down payment of 25 per cent, followed by monthly payments adjusted to individual situations, will probably be required. Terms may be extended over a period of three years, although minimum monthly payments will likely be no less than \$50 each.

Executives of the Commercial Credit Co. estimate a potential time sale volume of \$25,000,000 during the first two years of operation.

'Zeromatic' Cases Placed on Market

GRAND RAPIDS, Mich.—Announcement of "New Way Zeromatic" low temperature display and storage cases has recently been made by the Grand Rapids Store Equipment Corp.

"Zeromatic" cases are 52 in. in height, 34 in. in depth from front to rear and are built in 8 ft., 10 ft. and 12 ft. lengths, all of steel frame construction. A special device on these cases pre-cools and dehydrates the warm air which rushes into the display and service compartments when the service doors are opened.

The "Junior Zeromatic" line consists of two cases, one 3½ ft. long, the other 5 ft. long. Both are 34 in. in depth from front to rear and 38 in. in height, and stand on 5¼ in. satin nickel legs of modern design. These cases are designed particularly for ice cream manufacturers, and retailers of frosted fruits, foods, meats and vegetables.

"Zeromatic" wall cases in two sizes
(Concluded on Page 8, Column 5)

INSTITUTE KEEPS POOLE AT HELM; LAWS ATTACKED

Harden F. Taylor Flays Legislation Passed On Cold Storage

ATLANTIC CITY, N. J. — Gardner Poole, vice president of Birdseye Frosted Foods, Inc., was reelected president of the American Institute of Refrigeration at its 20th annual meeting held at the Ritz-Carlton hotel here April 30 and May 1. A. H. Baer, president of the American Society of Refrigerating Engineers, was elected first vice president. Manuel G. Durand, commercial attaché of the Argentine embassy at Washington, D. C., extended an invitation to the delegates to attend the sixth international congress of refrigeration, which will be held at Buenos Aires in August, 1932.

At the first day's session, Dr. Harden F. Taylor, president of the Atlantic Coast Fisheries attacked existing cold storage laws, particularly legislation pertaining to time limits on cold storage foods, and requirements for the labeling and marketing of goods so preserved.

He urged an educational campaign to acquaint the public with facts regarding the progress of refrigeration, and to destroy "false impressions which exist in certain quarters."

"Refrigeration," he said, "is the best and safest of all known preservatives, taking nothing and adding nothing, but at the same time keeping the vitamin content and nourishment value of food unimpaired."

"Misguided legislation as to time limits for which cold storage goods may

(Concluded on Page 8, Column 2)

PACIFIC FROSTED FOODS CO. PLANNED

NEW YORK CITY—General Foods Corp. and the Standard Oil Co. of California have announced the pending formation of Pacific Frosted Foods, Inc., organized for the commercial development of the Birdseye quick-freezing patents in the Far West.

Standard Oil Co. of California is interested in this development because of its control of the Pacific Public Service Co., which already has extensive interests in refrigeration, officials of the oil company assert.

Pacific Frosted Foods, Inc., will hold the rights to the basic Birdseye quick-freezing patents in the states of California, Oregon, Washington, New Mexico, Arizona, Colorado, Utah, Montana, Wyoming, Idaho, Nevada, Western Mexico, Alaska and Hawaii.

The general offices of the company will be located at 200 Bush St., San Francisco, Calif.

Serving Every Food Need



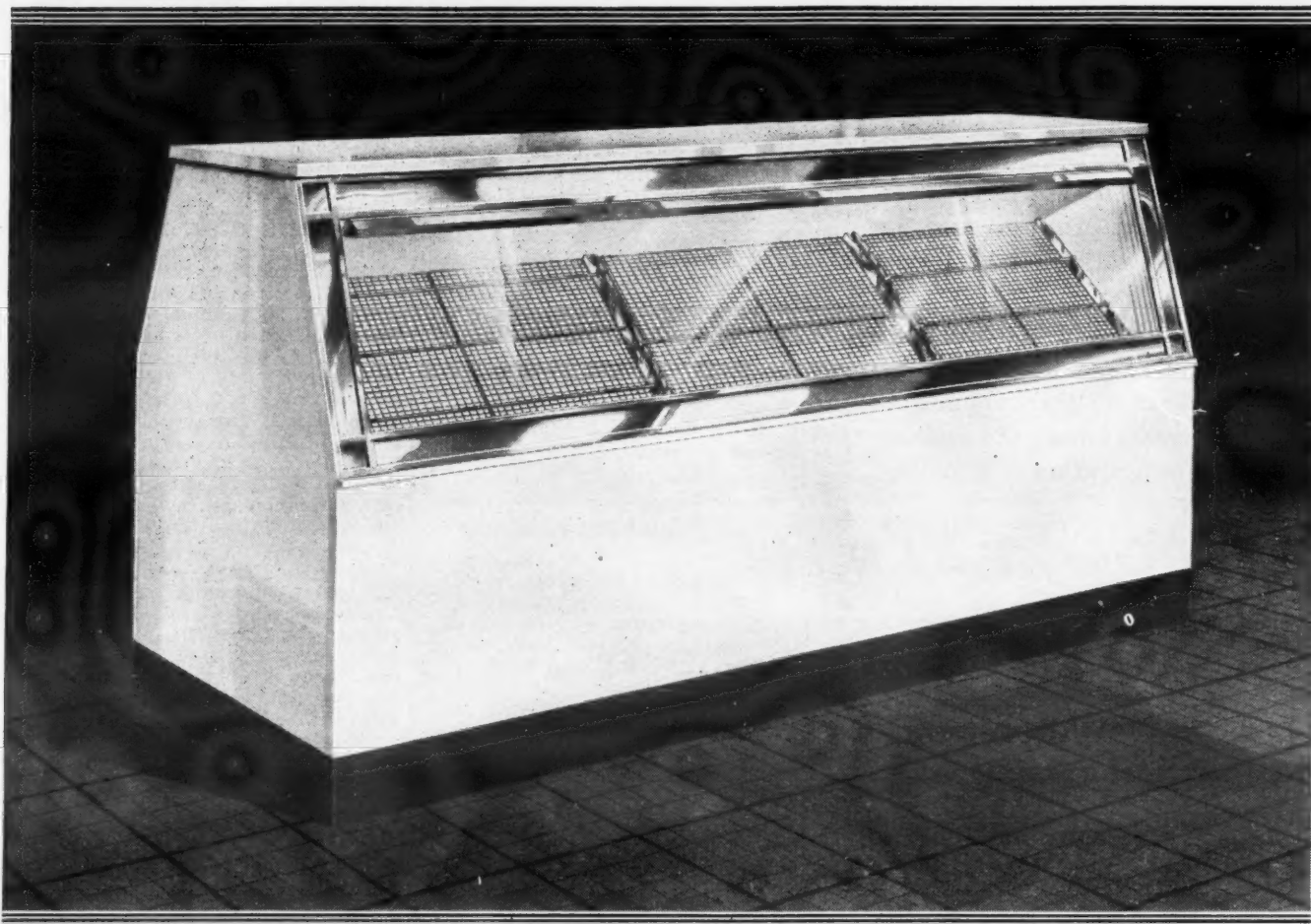
Striking a new keynote in the design of food stores, Hattem's \$250,000 super drive-in market, was recently opened in a suburban part of Los Angeles. The market building, which houses a series of individual stores, is equipped with York refrigeration for cooling the 200 ft. of display cases and a number of built-in storage coolers. The photograph above illustrates the exterior of this attractive market place, while the picture below shows the modern equipment used in the establishment.



THE NEW WAY

ZERO°MATIC

FROZEN FOOD DISPLAY CASES



ZERO°MATIC DISPLAY CASE



PRODUCT OF
GRAND RAPIDS
STORE EQUIPMENT
CORPORATION

WORLD'S LARGEST
MANUFACTURERS OF
STORE EQUIPMENT

GRAND RAPIDS STORE EQUIPMENT
CORPORATION Zero°Matic Display
Cases will be exhibited at the National
Grocers' Exposition, Milwaukee,
Wis., July 6, 7, 8, 9. Booths 18, 19, 20.

AFTER months of research and experimenting, the Refrigeration Division of the Grand Rapids Store Equipment Corporation now announces a completely new line of Zero°Matic Frozen Food Display Cases. These zero temperature cases mark a progressive step in the refrigeration industry. Our Refrigeration Engineers have made every known test before offering the Zero°Matic to the public. The perfected line now offers merchants a new opportunity to increase profits through the sale of frosted foods.

Zero°Matic Display Cases

Zero°Matic Display Cases are designed, engineered and built in several models and sizes, to meet *all* the requirements of the new Frosted Food industry. All Zero°Matic cases are built complete with cooling coils or plates and expansion valves. They also incorporate other special features of mechanism, convenience of arrangement for the merchant, beauty and refinement of appearance never before approached in display cases.

The Zero°Matic case is a decided asset and a very profitable

investment for any merchant who looks *forward* and intends to keep abreast of the times, especially in the rapid development of the Frosted Food industry.

Zero°Matic Junior

The Zero°Matic Junior is a small, zero temperature case of high efficiency, consistent performance, and ample storage capacity. It is made in 3½ foot and 5 foot lengths, 34 inches wide, 38 inches high, and stands on satin-nickel finish legs in modern design.

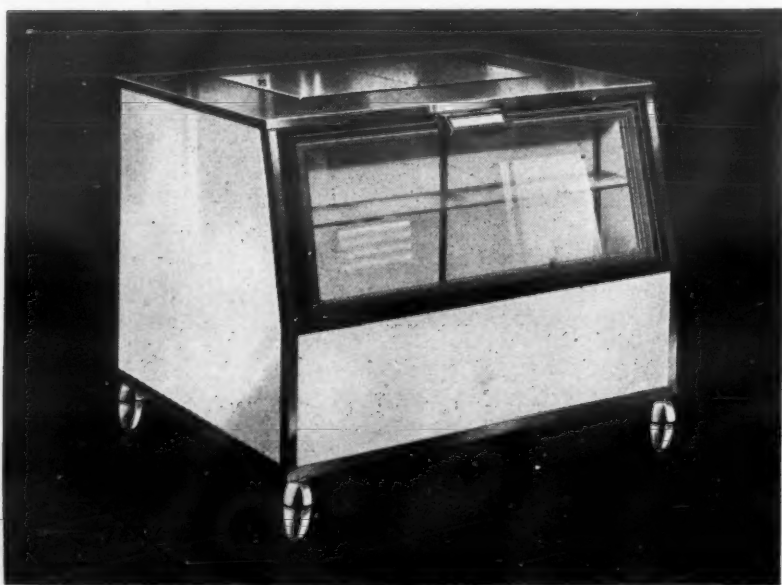
Zero°Matic Junior is designed particularly for the display and sale of frosted fruits, meats, food and ice cream in brick and moulds. Every merchant, everywhere, will want one or more of these cases.

Large ice cream and dairy concerns, as well as producers of frosted fruits and foods, can enlarge their sales volume by using these cases, making them pay for themselves out of added profits. Considering the high quality of their construction, Zero°Matic Junior cases are low priced, enabling any merchant, anywhere, to start selling frosted foods with only a modest investment. In addition, a time payment plan may be used if you wish.

Write for Further Information

A complete line of Zero°Matic wall display cases, florist cases, candy cases, double and single duty fresh meat and delicatessen cases, and double compartment cases for zero temperature and higher temperature, will also be ready shortly for the refrigeration trade. Every case will be of superior design in keeping with the "New Way" line of store equipment made by this company, and well known for its high quality all over the world.

Write today for illustrated folder, stating size of case that you require. If necessary, our technical sales staff will help you plan your individual requirements to show you a new way to increase your business and profits.



ZERO°MATIC JUNIOR

An unusual opportunity is available to established distributors and dealers in refrigeration equipment, to handle the Zero°Matic Line of display cases in conjunction with the sale of commercial compressor equipment. Write for details.

GRAND RAPIDS STORE EQUIPMENT CORPORATION
REFRIGERATION DIVISION

MAIN OFFICE: GRAND RAPIDS, MICHIGAN

FACTORIES: GRAND RAPIDS, PORTLAND, ORE., BALTIMORE, NEW YORK CITY

TAVERN PURCHASES SPECIAL EQUIPMENT

BRIDGEPORT, Conn.—A specially-built Du Bois cabinet with doors on both sides, cooled by a General Electric unit has been installed in Ye Olde Tavern, Main St. restaurant, by Allen Bros., General Electric refrigerator dealer.

The refrigerator, which has 59 cu. ft. storage capacity, was built to provide access from two different rooms, the main dining room and the kitchen. Doors are placed on one end as well as the front, so that prepared foods can be removed from the dining room side by waiters, while chefs can have access from the kitchen.

The refrigerator is cooled by a ½ hp. DR-5 General Electric compressor, and has a removable panel top for convenience in installing and servicing the unit, according to William I. Spain, commercial refrigeration representative of the Allen concern.

Allen Bros. were recently awarded the contract for installation of a CS-450 General Electric refrigerator in the new Central Ave. wing of the Bridgeport General Hospital.

This cabinet, which has 45 cu. ft. capacity, will be used in the kitchen for food storage purposes. It is the ninth General Electric installation in the hospital.

FRIGIDAIRE IN PORTLAND COMPLETES TEN BIG JOBS

PORTLAND, Me.—Ten large commercial installations have been completed by the Portland branch of the Frigidaire Sales Corporation of New England, according to William B. Ward, manager.

Twelve WM3 white porcelain apartment house cabinets were installed in the Kensington Apartments, 497 Cumberland Ave., with a W475 compressor.

Other installations were: Langley's Restaurant, Congress St., C compressor, three 20F coils, U compressor, 20 lb. ice maker and one T200 water cooler; Blue Kitchen, Forest Ave., one AP18; Armstrong Co., Portland Union Station, one AP60; Atlantic and Pacific Store, Pine St., K compressor and two 74F coils; United States Lightship No. 90, K compressor and direct expansion coil with Seeger P32 box; J. A. Burnell, roadside camp, Saco Road, 17F coil, W475 compressor with McCray 411 box and ice cream cabinets; Atlantic and Pacific Store, Ogunquit, two 18-66F coils, one 78F coil, One W232 compressor, one W50-100 water cooled compressor and one 12-42F coil; Mason Pharmacy, Freeport, 21X coil, 44F-coil and M compressor; and W. L. Coombs, three W6 white porcelain apartment house cabinets.

THOMPSON RESTAURANT MAY INSTALL SODA FOUNTAINS

NEW YORK CITY—The John R. Thompson Co., restaurant operator for 40 years, is planning a move that indicates the trend toward restaurant "atmosphere" and the removal of white tile, one-arm lunchrooms.

Tile and the installation of elaborate soda fountains which were experimented on for one year in nine popular-priced restaurants, will take the place of wood panelling and tables and one-arm chairs.

BROERING CO. TO REPRESENT HUSSMAN IN CINCINNATI

CINCINNATI—Broering Co., 126 E. Ninth St., has been recently appointed distributor by the Hussman Refrigerating Co.

The Broering Co. is operated by three brothers, H. A., J. H. and P. H. Broering. In addition to the Hussman line, the company is also distributor of Zerozone refrigeration and Temprite water coolers.

MIAMI BEACH MARKET BUYS WARREN, COPELAND SYSTEM

MIAMI, Fla.—An 8x10x10 new Warren walk-in cooler, using Copeland cooling equipment, has been installed by the Copeland Electric Refrigeration Distributing Co. in the Miami Beach Market.

PAWTUCKET SCHOOL BUYS UNIT FOR LUNCHROOM

PROVIDENCE, R. I.—The Blackstone Valley Gas & Electric Co. has installed two W-6 Frigidaires in the lunchroom of the new Pawtucket Junior High School.

MEMPHIS CO. ACQUIRES BEASLEY PACKING PLANT

MEMPHIS—Following the acquisition of the Beasley Packing Co., of Hollywood, Tenn., the Abraham Bros. Packing Co., is preparing to add several new departments.

RUMFORD FOOD SHOP ADDS BIRDSEYE LINE

RUMFORD, R. I.—Birdseye Frosted Foods are selling at a fast pace in this city, according to officials of the Rumford Store, the first in the state to handle this line of quick frozen products.

Although the store is in an isolated location across the street from the Rumford Chemical Works, sales of the Birdseye products have increased steadily. There are a few high class residential plats not far away, but the majority of the families in the immediate trading area of the store are of the wage earner class.

When the Birdseye Frosted Foods were stocked a short time ago, it was decided that the customers and prospective customers could best be reached direct by mail. As complete a list of the families as possible was compiled and a mailing of about a thousand circulars was made.

Frozen Foods are displayed and stored in an 8 ft. Hill Dry-Cold display and storage case. Fifteen different cuts of beef, pork, veal, lamb and chicken are carried in both the blue label (first grade) and the orange label (second grade) brands. Five cuts of fish are on sale. Strawberries, raspberries, cherries, blackberries, spinach, peas, baby lima beans and golden bantam corn are also stocked.

About three times the volume of the first week is now being done. This comes both from repeat business and from new customers, people from 20 miles around coming to the store to buy the new foods as soon as they hear about it.

One of the most popular packages is the Oregon spinach. Peas sell well, baby lima beans come next, and golden bantam corn fourth. Both strawberries and raspberries are big sellers.

In the meat line sirloin steaks, the different roasts, leg of lamb and loins of pork and chops have all sold well.

Clerks in this store find that the young people are especially enthusiastic about frosted foods, the newness of the idea appealing to them, while the older people are slower about making their first purchases.

It is estimated that about half of the thousand families to which the circulars were mailed have already used the frosted foods.

PROVIDENCE STORE SELLS BIG STOCK IN TWO DAYS

PROVIDENCE—The second store in Rhode Island and the first one in this city to sell Birdseye Frosted Foods is the A. S. Bunn & Co. store at 273 Thayer St., which is located not far from Brown University in the old aristocratic section of Providence. It caters to a high class of trade and numbers among its customers many wealthy families.

Announcing the stocking of a complete line of Birdseye Frosted meats, fruits, fish and vegetables, the store used a three column advertisement, 150 agate lines deep, in the Providence *Evening Bulletin*.

This advertisement announced that Frosted Foods would go on sale on Friday, April 24. However, it was not until about two hours before closing time that day that the stock was ready to sell. By Saturday night the complete stock of 1,050 pounds was sold and a reorder had to be rushed to have frozen products to sell on Monday.

In this store an 8 ft. Hill Dry-Cold display and storage case is used. It is placed in the center of the store and is the first case to be seen as one enters.

Some of these customers purchased Frosted Foods for the first time. Others have been using it for some time as they have been driving over to Rumford in order to buy the quick frozen foods at the Rumford store.

Many people who bought the Frosted Food on Friday or Saturday came back Monday or Tuesday to buy more. Four clerks employed in the new department are kept busy filling the frozen food orders.

NEW STRAUSS MARKET IN NEW BRITAIN EQUIPPED

NEW BRITAIN, Conn.—The Connecticut Light & Power Co., Frigidaire dealer, has installed two W-5-100 compressors and four 1866F coils in the new Nathan Strauss Market here. The equipment cools a walk-in refrigerator for meats and several display cases.

An E-4 Esco milk cabinet, with Frigidaire A 233-S compressor, has been installed by the same firm for B. Fleischer of Beckley.

CLARENCE SAUNDERS PLANNING NEW TYPE OF STORE

MEMPHIS—Clarence Saunders, who built and lost the Piggly Wiggly chain, is organizing on a nation-wide basis a new type of department store, selling drugs, bakery goods and sundry staples on the cafeteria grocery plan. This move will be financed by the Memphis banks.

You don't judge

cake

by icing

alone...



Don't select INSULATION[☆] for "low conductivity" only

OF course, insulation must have low conductivity (resistance to heat passage). But why stop there? Efficient insulation must pass several other tests of equal importance. Moisture resistance, lasting service without settling, strength, rigidity, ease of installation, reputation of the manufacturer—they must all be considered.

Judged by all these standards, there is one material that stands out—Armstrong's Type LK Corkboard. Properly installed, this light-weight, efficient insulation meets the severest requirements.

Low conductivity? Armstrong's Type LK Corkboard has a conductivity of only .263 B. t. u. per square foot, per inch thickness, per degree Fahrenheit temperature difference, per hour, at 60° F. mean temperature. Moisture absorption? Cork's resistance to moisture has been demonstrated not only by laboratory tests but also by many years of actual service. Strength? Type LK Corkboard is a rigid board that cannot settle in use. As for reputation, Armstrong's Corkboard has been standard insulation for many years in all kinds of cold storage and refrigeration work.

We will gladly send you samples of Armstrong's Type LK Corkboard for tests. And Armstrong engineers are at your service—their knowledge and experience are yours to command for any refrigeration installation, either normal or quick-freeze. Address Armstrong Cork & Insulation Company, 917 Concord Street, Lancaster, Penna.

AT YOUR SERVICE

Twenty-eight Armstrong Cork & Insulation Company branches at the following cities are ready to serve you. See Telephone Directory for street address of the branch office nearest you.

Albany, N. Y.; Atlanta, Ga.; Birmingham, Ala.; Boston, Mass.; Buffalo, N. Y.; Charlotte, N. C.; Chicago, Ill.; Cincinnati, Ohio; Cleveland, Ohio; Dallas, Tex.; Denver, Colo.; Detroit, Mich.; Grand Rapids, Mich.; Houston, Tex.; Jacksonville, Fla.; Kansas City, Mo.; Memphis, Tenn.; Milwaukee, Wis.; Minneapolis, Minn.; New York, N. Y.; Omaha, Neb.; Pittsburgh, Pa.; Rochester, N. Y.; St. Louis, Mo.; Syracuse, N. Y.; and in Canada—Montreal, Toronto, Winnipeg.

Armstrong representatives are located in the following cities: Baltimore, Md.; John R. Livezey; Los Angeles, Cal.; Gay Engineering Corporation; New Orleans, La.; H. T. Steffe; Philadelphia, Pa.; John R. Livezey; Spokane, Wash.; D. E. Fryer & Company; Portland, Ore.; Gillen-Cole Company; San Francisco, Cal.; Van Fleet-Freear Company; Seattle, Wash.; D. E. Fryer & Company; Washington, D. C.; John R. Livezey.

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★ *Star these 6 questions when you buy insulation:*

- ★ Is it an efficient barrier to heat?
- ★ Will it resist moisture?
- ★ Will it serve without warping, shrinking, buckling, or settling?
- ★ Will it resist decay and deterioration?
- ★ Has it structural strength?
- ★ Is it permanently reliable?

Armstrong's

Product

Armstrong's TYPE LK Corkboard Insulation

Efficient and Practical Insulation for Refrigerating Equipment

REFRIGERATED FOOD SECTION ELECTRIC REFRIGERATION NEWS

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Good News for Fruit Growers

THE application of quick-freezing principles to meat packing introduces a new method of distribution, and offers interesting possibilities in improved sanitation and economical handling. To the fruit-growing industry, however, quick-freezing comes like an answer to a prayer.

Meat on the hoof will not spoil, for life-blood is the best preservative known. But fruit on trees and vines will deteriorate, and for ages owners of vineyards and orchards have wondered what to do with their surplus crop, have looked with longing eyes upon the high prices fresh fruits command in out-of-season periods, and have despaired when they realized that apparently little could be done about the situation.

Cold storage has contributed its bit to the partial solution of the problem, but with the entrance of quick-freezing into the picture, fruit growers are beginning to believe that the dawn of a new day is breaking. They understand that soon they will be able to run a quick-freezer-on-wheels right into their orchards or groves, freeze the crop as they pick it, and store the surplus until such time as demand for it arises. (A portable quick-freezer, using a newly developed plate system, has been invented by Clarence Birdseye. Mounted on a truck, it is now following the strawberry crops through the South, and will likely continue its journey up through the middle West to Michigan).

Saving the Surplus

In the past, fruit has been picked green and allowed to ripen en route to its markets. Thus, fully tree-ripened fruits rarely find their way into the majority of American homes—much to the perennial chagrin of the growers, who are naturally anxious to sell the very best varieties of fruit they can produce. Moreover, a large portion of the ripe crop is usually left to rot on the trees or on the ground, since the local market is usually so glutted that the grower could scarcely pay the cost of picking and packing from the sales price he would get.

In Georgia, for instance, it is estimated that one-third of the bumper peach crops grown down there has been left unpicked. The advent of Tom Huston Frozen Foods, Inc., however, gives hope to Georgians that part or maybe all of this annual wastage may be converted into salable products by freezing. Other freezing plants are springing up in that region, and the entire South is rejoicing over this contribution to southern welfare and prosperity.

From California comes news that grape growers are pulling vines in the attempt to raise prices by decreasing supply. A companion story comes from the Georgia Experiment Station, where H. P. Stuckey and J. G. Woodroof have discovered that grape pulp can be quick-frozen successfully, and can foresee a greatly extended market for grapes. In a few years the California vineyard owners may regret the destructive measures they have thought necessary to undertake this year.

Down in Florida, orange juice is being frozen and shipped to Eastern markets. This process not only allows orange grove owners to find a market for their surplus crop, but admits the use of small (but highly juicy) oranges which hitherto have been unmarketable. And Eastern city dwellers

are now able to enjoy the health-bringing qualities of fresh orange juice every morning, delivered along with their daily quotas of milk.

Infant Industry

Tom Huston is freezing bananas. He is experimenting with figs. Other southern concerns are freezing grapefruit juice. The quick-freezing of other fruits on a commercial scale can be expected at a reasonably early date. Thus far it has been found necessary to freeze whole fruits in a protective covering of sugar syrup. And although Georgia Experiment Station research workers are almost convinced, as a result of their studies, that some sort of a coating is essential, other experimenters are hoping to freeze fruits and keep them successfully without protection other than low temperatures.

Undoubtedly quick-freezing is still in its swaddling clothes. Undoubtedly a job of public education must be done to develop a demand for frozen food. But enough has already been accomplished to give fruit growers reason to hope for great things in the future. They can see profits where waste stood before. They can envision full-flavored, tree-ripened fruits on consumers' tables all over the land in all seasons. They can forecast greater service to the nation, and the improvement of public health.

To the city dweller in the northern states, quick-freezing is just a new idea, with some possibilities for more convenient distribution arrangements. To the fruit grower of the South, quick-freezing has all the earmarks of a life-saver.

GLEANINGS FROM RECENT PERIODICALS

THERE are several ways in which a store front can be made very attractive. It may be that an inexpensive addition of tile beneath the window displays will heighten the effect of neatness. The model store is on a level with the sidewalk. No steps up, no steps down. Before many of the old-fashioned stores, where the proprietors are bawling their hard times, you will find anywhere from one to three steps leading to the entrances. They are just so many invitations to stay out. Why should the grocer make it hard for customers to come in? Of course, a shopper might not consciously object to a step or so, as lazy as we all are, but somehow that little extra effort seems to have disproportionate influence in making people go elsewhere.

In looking at the window display, we have no handicap to overcome in the form of dirt on the glass. Our model grocery store proprietor does not believe in hiding his light under a bushel. Before a new display is arranged, the windows are carefully cleaned on the inside as well as on the outside. The displays are low, so that a customer can stand outside and see all the way back of the store. This overcomes our old jungle prejudice against going into an unknown and unseen place. And then, some of our cartoonists and popular philosophers will tell you that people are always willing to believe the worst, and that what they can't see, they imagine to be very bad indeed. It is best to nip any such tendencies in the bud by putting the whole store on display.

One window contains only fruits and vegetables. That is one class of food that can apparently be depended upon to make a display and that will draw customers into the store. The reason is probably that fruits, especially, can be shown ready for consumption, and therefore ready to create desire. Other items are hard to show in this form, with one or two exceptions. A well arranged window of bakery goods may constitute the main attraction of a grocery store. Bottled drinks may also suggest immediate consumption, though in a lesser degree. Packaged goods, while not as suggestive of food on the table, may nevertheless be arranged in such a way as to appeal to the aesthetic sense of the buyer. Usually such displays are accompanied by prominent price tags.

A window to be effective, should be simple. Attention should be focused, rather than scattered. In a crowded display, individual items are lost. A simple geometrical design is best because it will not detract attention from the goods themselves and also because it gives an impression of neatness. A merchant who studies his displays will want to know that square and circular surfaces are not considered as interesting as oblongs and triangles. Curves are usually more attractive than straight lines. These are, of course, only suggestions, that should be tested with a great deal of intelligent experimentation. I notice that in the picture of one model store, the fruit display is made up of two different colors of fruit. The line separating the two zig-zags across the window, making five separate triangles. Behind the fruit, are small displays arranged in pyramids. In the other window, two lines of bottles of related drinks lead to a curved picture in the background.

In any discussion of window dressing, whether it be for the grocer or some other type of retailer, too much attention cannot be given to proper lighting. When the merchant has arranged his display as attractively as possible, it is to his best interest to make it as visible as possible. Good lighting not only attracts more people, it also creates an atmosphere of cheerfulness. So many authorities are agreed on the value of lighting, and it is so obvious to anyone who will give a thought to the matter, that it hardly seems necessary to make tests to furnish conclusive proof. However, such tests have been made, and they should remove any doubts that might linger in the minds of grocers or other merchants.—John H. Farrell, *Wilmington*.

An Editor on Wheels

Stories of Interesting PLACES in the Refrigeration Industry

By GEORGE F. TAUBENECK

Travelers' Guide to Chicago

Hotels

THE STEVENS. Largest hotel in the world. It confronts Lake Michigan, and is situated on the west side of South Michigan avenue.

For big conventions it offers expansive facilities—long, roomy foyers and a great section of the basement floor for exhibits, banquet rooms of various sizes, lecture halls, and guest rooms sufficient to house two or three conventions at the same time, with enough left over to accommodate the Descendants of American Families Who Came Over in the Mayflower, and the Amalgamated Association of Vice Presidents of First National Banks. In a pinch, another floor or two can always be opened up.

Not recommended for individual travelers or small parties. Service is slow, and the organization is too big and unwieldy for satisfactory personal attention.

THE DRAKE. If you like to bask in the limelight shed by celebrities, stay at the Drake.

Chairmen of boards, presidents, sales managers, authors, editors, artists, senators, cinema stars, stage celebrities, long-distance flyers, visiting nobility, millionaire sportsmen, famous beauties—all these and more are registered daily on the books of this distinguished hotel.

In the elevators one hears impeccably spoken foreign languages, sees personages who have the air of distinction. In the dining salons one sees smart clothes, faultless service. In the hotel's shops one finds the best of new books, exclusive gowns, rare flowers, authentic "objets d'art."

On north Michigan boulevard—beyond the bridge and across from the skyscraper which flaunts the Lindbergh Beacon (a powerful, sweeping searchlight which spans Lake Michigan and embraces whole counties in its circuit), the Drake is far enough out of the city's bedlam to offer quiet, rest, peace, and relaxation, without being too distant for easy access to the commercial center.

The beach of Lake Michigan is in its back yard—one can look up from one's meal and see the waves come rolling in. Rooms are in excellent taste, and comfortable.

In the afternoons a string ensemble gives chamber music concerts. At night subdued dance orchestras attract small crowds of Chicago's younger set. Popular for wedding parties.

Recommended for the *bon vivant*. But be prepared to pay for what you get.

EDGEWATER BEACH. Fashionable hotel which attracts many permanent guests.

Further north than the Drake, located on Chicago's sumptuous North Shore Drive, it is near the city's finest homes and most "haut ton" residential district. Lake Michigan laps its foundations.

Good food, good service, good music. Too far from the center of activities for the man who has a busy day ahead of him amongst the marts of trade.

PALMER HOUSE. In the heart of Chicago's business district, this hotel combines proximity to the skyscrapers with a certain degree of comfort and good living.

Its street level floor is entirely given over to shops; the lobby is on the second floor.

Used much for luncheons, dinners, and appointments. Often too busy for quick service or complete privacy.

BLACKSTONE. Under Drake management. Distinguished old hotel frequented by those who remember its past glories. Excellent food, and the best-trained service in the city.

Situated on South Michigan boulevard, it offers lake breezes, in addition to caste and lineage. Expensive.

SHERMAN. Busy, well-filled hotel right smack in the middle of the Loop. Often noisy and usually crowded, but you get what you want when you want it there.

Adjacent to almost everything, including the theatrical district, of which it is the center. Recommended for insensitive business men who want to lose no time.

Not recommended for vacationers—

unless they come from rural districts and want a contrast.

MORRISON. Ditto the Sherman, but cheaper. The hotel of the sporting element. Baseball players, boxers, wrestlers, race track followers, heavy sugar daddies—they all flock here.

Home of the famous Terrace Garden: rows of candle-light tables arranged in semi-circular terraced rows, with a small dance floor at the bottom. Very pretty. Good food, mediocre music, occasionally bibulous.

CHICAGO BEACH. Old-fashioned, aristocratic, weighted with memories of a glorious past. On the South Side. Large, not particularly modern in accommodations, comfortable.

Recommended for older people, for visitors from the South.

LA SALLE. Fairly satisfactory hotel in the heart of the Loop, with moderate prices for everything. Rarely crowded.

Not the most comfortable of hotels, but has a sufficient number of conveniences to suit the business man who is interested chiefly in speed and proximity.

CONGRESS. Adjacent to the Stevens, on South Michigan boulevard. Quite reputable.

Is best known for its art galleries, and for its "Peacock Alley," a long foyer which functions as a sort of interior Atlantic City boardwalk.

Compromised with modernity last year by installing a de luxe miniature golf course in one end of its lobby.

BREVOORT. Hangout of the intelligentsia. Good cuisine. In bygone days was Chicago's Greenwich Village—all under one roof.

Haven for impecunious poets and artists. Has an interesting atmosphere, albeit a bit smoky and shabby.

Food and Music

CASA GRANADA. 6800 Cottage Grove. Phone: Dorchester 0074. Better phone Head Waiter Bill Leather for reservations, as this place is usually crowded.

Food: middling to excellent. Decorations: best in Chicago—will set your head swimming without benefit of tonal polish. Music: Paul Whiteman, Fred Waring, Ted Weems, Guy Lombardo, and other monarchs of syncopation hold forth here—always good. Floor show usually amusing. No cover charge.

Highly recommended, if you can spare the time to drive out there and spend an evening, and don't mind dining with a thoroughly assorted lot of beer barons, cloak-and-suit buyers, and collegians.

BLACKHAWK. 139 North Wabash. Phone: Dearborn 6262. Plenty of room these days, although in previous years (when the food was better) it had a waiting list as long as that of Princeton.

Coon-Sanders and their famous band appear nightly. No more inspiring music to be found anywhere. One entertainer, male, first class—if you don't hear him too often. Quiet, well-behaved crowds.

Food not bad, neither is it especially good. No cover charge.

COLLEGE INN. In Hotel Sherman, Clark at Randolph. Phone: Franklin 2100. Better reserve your table.

Food: Good; don't miss their chocolate ice cream; original home of tomato juice cocktail. Music: Ben Bernie—rapidly becoming one of Chicago's best bands. Floor show: unpredictable.

Crowd: sometimes unruly, often replete with heavyweights, not altogether savory.

TERRACE GARDENS. In Morrison hotel, 79 West Madison. Phone: Franklin 8600. Rarely half full. Attractive (described in paragraph above about Morrison hotel). Food: Often good.

Music: Clyde McCoy (cleverest trumpeter in captivity) and his boys from 'way down South. No cover charge, and food prices quite reasonable. Crowd: not distinguished. (Concluded on Opposite Page)

A PAGE FOR HOME SERVICE WOMEN

Editor on Wheels

(Concluded from Opposite Page)

BLUE FOUNTAIN ROOM. In the Hotel La Salle, La Salle at Madison. Phone: Franklin 0700. Often jammed, but the crowd is orderly. One of the favorite haunts of Chicago's youth.

Food: Respectable and not costly. Music: Husk O'Hare, who delights in soft, slow rhythms. Recommended.

BALLOON ROOM. In the Congress hotel, Michigan at Congress. Phone: Harrison 3800 (Roy Barrett is the man). Come late.

You will not feel at home unless you are in dinner clothes. Extremely chummy atmosphere.

Food: a la carte only, good, expensive. Music: Jan Garber. No cover charge.

EDGEWATER BEACH. 5349 Sheridan Road. Phone: Longbeach 6000. In Summer tables are outdoors, with lake breezes, moons, and all the trimmings. Non-pyrotechnical orchestras, with waltzes a specialty. Crowd: dignified. Food: unimpeachable. Highly recommended.

CLUB ALABAMA. 747 Rush. Phone: Delaware 3260. Chinese and so-called southern dishes. Highly intimate revue, too close for comfort.

Recommended for just-before-dinner forays, when you don't know any better.

'No Orchestral Din'

HENRICKS. 71 West Randolph. Unusually good coffee. Quite palatable foods at quite nominal prices.

Favorite hunting grounds of suburban families out for a dinner away from home. You might like it.

HARDING'S COLONIAL ROOM. 21 South Wabash. Luncheon or dinner. Varied menus, with emphasis on "health foods."

Training school for professional dieticians. Most intelligent waitresses on this or any other globe. Try it at least once.

L'AIGLON. 22 East Ontario. French cooking. O. K. if you like that sort of thing.

ROCOCO HOUSE. 161 East Ohio. If you've never eaten Swedish dishes, here's the place to experiment. Demonstrates why the Vikings were so bold.

HUYLER'S. 310 North Michigan. Waffles of every description, browned scientifically. Their gingerbread waffles are just the ticket for that grouchy feeling. Modernistic furniture. Lackadaisical service.

Things to See and Do

In season, the Chicago Civic Opera, which is sponsored and heavily underwritten by Samuel Insull. Also the Chicago Symphony Orchestra—Friday afternoons and Saturday evenings. Usual.

Economist Tests Recipes



Edwina Nolan Testing New Recipes at G. E. Home Institute.

ly a fair selection of good plays are on hand. If you must go to the movies, the Chicago theater is the most beautiful and restful.

The Tribune Tower, 431 North Michigan avenue, is an imposing Gothic structure, the top of which commands a first-rate view of the city, the lake, and the dunes. Not far away is the Merchandise Mart, the world's largest building, and worth a good glance.

Most interesting visit in Chicago: the Planetarium. Popular lectures and unforgettable visual demonstrations of the heavens and what's in them. Astronomy made easy—and exciting. Don't miss it.

Cubs and White Sox in season, also hockey, basketball, and tame pugilism in the Stadium (indoors). Football superspectacles at Soldier's Field, which seems almost large enough to accommodate the nation's unemployed.

Two good motor drives: (1) the Outer Drive, which flirts with Lake Michigan for quite a distance south of the Art Institute, and which passes Buckingham Fountain; and (2) Sheridan Road and Lake Shore Drive, which combine dandy glimpses of the lake with a survey of the city's finest residential district. These concomitant roads begin just north of the Drake hotel.

Not recommended: the stockyards, Hull house, Chinatown.

VIRGINIA UTILITY CO. USES KITCHEN ON WHEELS

ALEXANDRIA, Va.—One of the Virginia Public Service Company's buses has just been converted into a portable electric kitchen.

The equipment in the kitchen on wheels is connected for use and consists of an electric range, an automatic electric storage water heater, a Kelvinator, a sink and a small utility cabinet for small appliances.

Economy Test Plan Proves Successful

By Edwina Nolan

Home Service Director, General Electric Refrigeration Department

A NEW plan for selling refrigerators has been evolved by the E. H. Schaefer Corp., Milwaukee distributor of General Electric refrigerators. The method employed, is to place a General Electric in the home of a prospect with the guarantee that if the householder is not convinced after 30 days that the refrigerator will pay for itself, it will be removed and the down payment refunded.

The plan was worked out by Keyman Wolf of the Schaefer organization. When the refrigerator is installed in the home of the prospect a two-page chart is presented to the woman in which she is requested to mark down the savings made possible by use of the electric refrigerator.

With the chart is a card stating that the down payment, usually \$15, will be refunded and the refrigerator removed if the housewife is not satisfied that enough money can be saved to pay for it.

I learned from Mr. Wolf that the company within the last 90 days has placed more than 200 refrigerators in homes on this basis and that without an exception every one has been a sale.

The chart makes it possible to enter savings on all food purchases.

DETROIT HOUSEWIVES WIN REFRIGERATORS

DETROIT—In order to stimulate interest in the Detroit News Cooking School, held in the Masonic Temple auditorium recently, four household electric refrigerators were given away to holders of winning numbers.

Those who held the lucky tickets were Mrs. W. E. Saigent, who won the Kelvinator refrigerator, donated by the Kelvinator Sales Co.; Mrs. G. Kuehn, who was the winner of the Westinghouse refrigerator, donated by the Dairymple Co.; Mrs. Charles A. Gerbie, who won the Norge refrigerator, donated by the Norge Corp., and Mrs. Gertrude Keller, who held the lucky number for the Frigidaire, donated by the Frigidaire Sales Corp.

The school was conducted by Jessie De Both, who lectured to nearly five thousand women each afternoon. Miss De Both stressed the point that electric refrigeration is not expensive.

FRIGIDAIRE DEMONSTRATED AT COOKING SCHOOL

KANSAS CITY.—At the four-day cooking school held here recently by Mrs. Chitwood for the Journal-Post and twenty assisting merchants, two Frigidaires were used in all demonstrations before the class.

The school, which was conducted in the Pompeian Room at the Hotel Baltimore, was attended by capacity audiences at every session.

MAJESTICS FOR APARTMENT

SOUTH NORWALK, Conn.—The Norwalk Electrical Co. will install 19 Majestic electric refrigerators in the new Webster Apartments here.

This attractive 4-hole ice cream cabinet has a Monel Metal top and trim. Manufactured by the C. NELSON MANUFACTURING COMPANY, St. Louis.

MONEL METAL CABINET TOPS

have "the Call"... Here are the Reasons

If you want to know "what the well dressed ice cream cabinet is wearing" ...and why...check with the leading manufacturers.

You'll discover that Monel Metal is used for cabinet tops, trim or lids on virtually every ice cream cabinet made! You'll also learn that many of the most prominent fabricators—the C. Nelson Manufacturing Co., for instance—have been using this lustrous, durable Nickel alloy for years.

Monel Metal cabinet tops combine modern attractiveness with stubborn resistance to the constant wear and tear encountered in ice cream dispensing service. Monel Metal is strong as steel, with no coating to chip, crack or wear off.

Rust-proof and highly resistant to corrosion, Monel Metal can be kept clean and bright with minimum cleaning effort.

Most of these desirable characteristics are due to the fact that Monel Metal is nearly 70 per cent. Nickel. Nickel is the whitening, strengthening partner that makes many modern alloys more beautiful and durable. It pays to remember that "Nickel Alloys Look Better Longer" and that Monel Metal is a high Nickel alloy.

THE INTERNATIONAL NICKEL COMPANY, INC., 67 WALL STREET, NEW YORK, N. Y.

Monel Metal is a registered trade mark applied to a technically controlled nickel-copper alloy of high nickel content. Monel Metal is mined, smelted, refined, rolled and marketed solely by International Nickel.



A HIGH NICKEL ALLOY

MONEL METAL

NICKEL ALLOYS LOOK BETTER LONGER

Food Distribution Statistics

Food Sales and Outlets in 9 West Virginia Towns and Cities

	Total Food Sales	P.ct. of all Retail Sales	Grocery Stores with Meat Departments		Meat Markets	
			No.	Sales	No.	Sales
Bluefield	\$2,305,740	20	34	\$1,466,223	7	\$ 250,230
Charleston	8,638,548	21	111	4,494,408	39	2,124,605
Clarksburg	3,396,358	19	60	2,011,284	7	223,293
Fairmont	3,369,175	23	39	1,732,231	10	458,692
Martinsburg	1,385,059	19	20	824,679	1	.....
Morgantown	1,881,077	21	8	574,649	7	310,774
Moundsville	1,715,328	31	26	813,768	6	212,034
Weirton	994,142	33	21	590,773	1	.....
Wheeling	8,635,175	21	105	2,576,355	36	1,577,567

Food Sales and Outlets in 13 Virginia Towns and Cities

	Total Food Sales	P.ct. of all Retail Sales	Grocery Stores with Meat Departments		Meat Markets	
			No.	Sales	No.	Sales
Alexandria	\$2,252,424	27	42	\$1,302,198	9	\$ 234,803
Charlottesville	2,355,852	20	24	1,519,833	3	271,215
Danville	2,284,225	19	32	753,390	26	496,671
Hopewell	945,300	25	16	231,686	19	288,550
Lynchburg	4,271,594	19	56	2,165,558	12	492,653
Newport News	4,160,970	26	62	1,962,959	21	498,642
Norfolk	15,303,175	22	277	5,310,683	163	2,897,904
Petersburg	3,677,980	26	34	1,044,383	32	304,343
Portsmouth	4,332,113	32	76	1,331,156	78	1,144,486
Roanoke	9,612,449	23	84	2,755,235	36	1,442,225
Staunton	1,155,647	15	8	364,928	4	87,518
Winchester	2,040,800	20	15	463,038	7	240,074

SMALL TOWN CAFE USES \$4,000 SYSTEM

DICKINSON, N. Dak.—Food served in Quinlan's Cafe here is protected by a \$4,000 refrigerating system, which was installed by the North Dakota Power & Light Co., according to Carl L. Sundland, commercial manager.

Although installed about a year ago, the Kelvinator system in the cafe, Sundland states, has required only a minimum amount of service.

Appetizing foods are stored in the window display case which is refrigerated by the Kelvinator system in the cafe. Hooked up in multiple with the window case is the soda fountain, both of which are cooled by a ½ hp. condensing unit.

Supplementing this equipment is a walk-in cooler for food storage, a large Seeger service cabinet, a small Seeger pantry refrigerator, and a water and a milk cooler. Two compressors, one a 1½ hp. unit and the other a ½ hp. unit, handle this equipment.

According to Sundland, this installation is believed to be the largest of its type in Dickinson, a town with a population of 5,000 people.

Window Case Attracts Customers



Quinlan's Cafe in Dickinson, a small town in North Dakota, is completely equipped with electric refrigeration.

Special Equipment Overcomes Difficulty Of Freezing Orange Juice

By R. V. Grayson
Consulting Engineer, Polar Products, Inc.

ONE of the greatest problems of the citrus industry has been the marketing of surplus grapefruit and oranges.

The surplus grapefruit has been largely taken care of through the medium of canning and processing in steam retorts, by using the same method as the canning of fruits and vegetables. This method of food preservation is adaptable to grapefruit, and a very high quality product has been produced.

A number of citrus canners in Florida have attempted to preserve orange juice in the same manner, and within the past decade many experiments have been conducted by the citrus industry toward the extraction and freezing of orange juice under conditions which were most unfavorable. Little or no consideration was given in these experiments to metallic contamination of juices and elimination of essential oils from the peelings.

Inasmuch as orange juice becomes rancid if it is allowed to stand for intervals after extraction, or is frozen slowly, the results of these experiments were disastrous financially. However, the experience gained has been invaluable to the industry.

Many attempts have been made to adapt the same equipment as is used in freezing ice cream, without success.

The principal objection to this equipment is that ice cream freezers are designed with the view of creating an over-run of from 15 to 40 per cent of air, which gives a fluffy, velvety texture that is very desirable in producing a high quality product.

With orange juice the operation is diametrically different, inasmuch as the introduction of air tends to promote oxidation, which is the principal contributing factor in the disintegration of frozen foods and juices.

A series of tests has recently been made in peach freezing plant of the Polar Products Co., Inc., at Monticello, Georgia, with orange juice, whole milk, grape juice and eggs. It was found that the oxidation of the products seemed to be the greatest difficulty in the proper preservation of frozen foods and juices.

With this in mind, it was decided to develop special equipment by which the frozen products could be de-aerated in the process of freezing.

A series of experiments were made with a specially constructed vertical freezer, whereby a continuous vacuum was maintained during the freezing period, and it was found that this eliminated the oxygen from the pack and at the same time eliminated the over-run, thus correcting a serious problem, which has been the shrinkage of products after defrosting.

This method of freezing was demonstrated to the Florida Citrus Exchange, which was contemplating ways and means of merchandising the surplus Florida oranges.

During these demonstrations at Tampa, Philadelphia and New York, a contact was made with a representative of the National Dairy Products, Inc., of New York City.

After a series of conferences, the National Dairies, which had decided to distribute a quantity of frozen orange juice in several of its dairy locations to determine the possibilities of merchandising orange juice in conjunction with milk

distribution, obtained rights to the use of the Grayson De-aerating freezing system.

The National Dairy Products Co., Inc., of New York, formed a subsidiary corporation known as the National Juice Corporation, with principal offices and plant in Tampa. A contract was negotiated with the Tampa Union Terminals to freeze a large quantity of orange juice under supervision of the National Juice Corp.

The following process for the handling of oranges has been approved and adopted by the National Juice Corp.:

The oranges are brought in from the groves in field boxes and placed in pre-cooling rooms, where they are amply pre-cooled before processing. From pre-cooling rooms they are delivered to the juice plant by means of a gravity conveyor, and into a washer, where the fruit is carefully washed and dried, after which it passes along a grader where the fruit is carefully inspected and all doubtful and inferior grades are thrown out as culls.

After careful grading the fruit is conveyed to a sizer, which is standard citrus packing equipment.

From the sizer the fruit is passed to a battery of 24 peeling machines, and from the peeling machines to Allegheny metal pans, where the fruit is inspected to see that all of the peeling is properly removed. From this point on, all equipment with which the juice comes in contact is constructed of Allegheny metal.

After this operation, the oranges are passed on to a battery of 10 expressors, which are of a spiral rotary type, and which press the juice from the oranges, at the same time separating the seeds and pulp, which are conveyed outside of the building.

The juice flows by gravity from the expressors to a filter of special type, which separates a percentage of the pulp and juice to meet the specifications of the National Juice Corp. From the filter the juice is pumped to the Grayson De-aerating freezing system, which consists of a series of Allegheny metal reservoirs where the de-aeration is accomplished by means of vacuum pumps which are operated at approximately 29.80" of vacuum.

From the vacuum reservoirs the juice is passed to the special type vertical freezer, where a constant vacuum is maintained during the freezing process.

After the juice is frozen to a slush, the freezers are evacuated into Allegheny metal slush reservoirs, which are also in the vacuum system. As the exhaust reservoirs are filled, the vacuum is released with an inert gas to a filling machine, which fills 120 cups per minute.

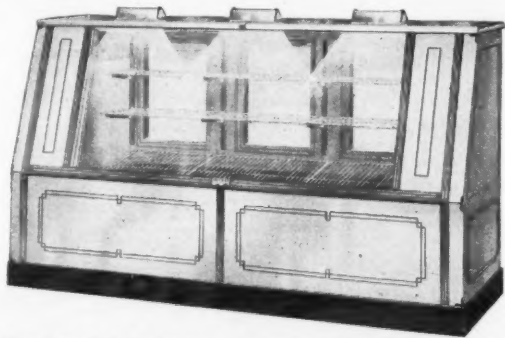
From the filling machine the cups are passed to the sealing machines, where each cup is carefully sealed, and then sent to the sharp freezer, where a temperature of approximately 10 below zero is maintained.

In the Florida plant an extensive laboratory is maintained, in which experiments are being conducted with every known method of freezing and practically every known type of container. The commercial pack for this year has been placed in wax containers, one-gallon tin cans (vacuum sealed) and five-gallon slip cover tin cans.

New McCrays for Use with Machines

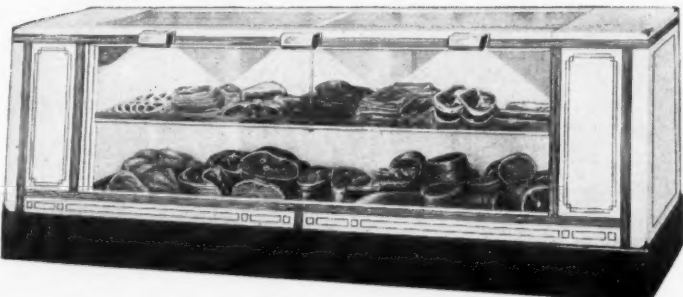


Model No. P425. Porcelain exterior and interior. Walls four inches thick with three inches pure corkboard sealed with hydrolene. Display doors have three thicknesses double strength glass. Nickel-plated bronze hardware with self-closing fasteners. Square feet shelf space 45. Cubic capacity of interior 45.62.



Model No. 8. A display case refrigerator for delicatessen use—has porcelain exterior with Monel metal trim and black base. Display front has three courses plate glass. Ample storage space inside.

Model No. P3110. Exterior, front, top, and ends of white porcelain trimmed in black. Nine-inch black porcelain base. Six-inch walls have four inches corkboard insulation; hardware of nickel-plated bronze.



Model No. P424. Exterior and interior of gleaming white porcelain. Walls four inches thick with three inches pure corkboard. Display doors have three thicknesses glass. Nickel-plated bronze hardware, doors fitted with double gaskets, fasteners of self-closing type. Base and cornice of black porcelain. Shelf space 69.36 square feet, cubic capacity 70.33.

"KNOWING HOW" is the priceless ingredient in any process of manufacture. Into every McCray refrigerator go hidden qualities—the result of 41 years' experience—which make a big difference in service—eliminating spoilage and cutting operation costs.

To the dealer in mechanical refrigeration of any type, this dependable, time-tested service of McCray means more satisfied customers. Regardless of the machine installed, the refrigerator cabinet itself determines the practical working efficiency in operation.

Shown above are several

typical McCray cases and cabinets—all constructed to the same high standards of in-built quality—strikingly handsome in appearance and all insulated with pure corkboard sealed with hydrolene.

The McCray line is complete. There are models to meet every need and dealers in machine refrigeration should write now for catalogs and information. Remember that every McCray model

may be used with mechanical refrigeration of any type.

McCray Refrigerator Sales Corporation, Dept. 66, Kendallville, Indiana. Salesrooms in All Principal Cities. See Telephone Directory.

ALL McCRAY MODELS
MAY BE USED WITH
MECHANICAL
REFRIGERATION OF
ANY TYPE

McCRAY

REFRIGERATORS



MUTUALLY PROFITABLE —

For the Buyers, Excelsior Refrigerating Machines are profitable investments because they give a lifetime of dependable and economical refrigeration service.

For the Dealers, Excelsiors return a legitimate profit that is safeguarded against shrinkage due to service grief. Every Excelsior installation will help sell more. Some promising territory is still open—write TODAY for full information.

THE CARBONDALE MACHINE CO.

Main Office: CARBONDALE, PA.

Address Inquiries to Excelsior Division, South Norwalk, Conn.

'One Out of Nine Have It' In This Small North Carolina Town

By Roy Baird

TRYON, N. C.—By dealers' records there are at least 181 homes or small apartment installations in this Piedmont town of 1600 scattered people.

In L. C. D. terms, that is one electric refrigerator for every ninth person (8.84 people to each refrigerator, if you care to split hairs or heads.)

Considering the fact that in Tryon there are about 400 or 500 colored people, most of whom as possible immediate buyers are not very speedy looking prospects, the proportion becomes all the more impressive. Conservatively, to figure the rest of the point off the pencil, there is one electric refrigerator for every 6.63 persons here.

Be that as it may, the three dealers here believe there is still an open market. A survey of the town supports this opinion and shows that these dealers are not just hot-air peddlers of cold ozone.

Within one mile of the city limits (which reach a long way up the mountain and thru the valley), there are very good possibilities for at least 6 commercial installations, 10 water coolers in mills and shops, equipment for 7 tourists inns and tea houses, and domestic units for several scores of high class private homes. Additional evidence—the local ice company runs an average of three trucks a day.

Tryon is predominantly a tourist town, and of course there lies the reason for the large ratio of electric refrigerators in a mountain village whose Trade Street out of season looks about as prosperous as a mountaineer's mule.

For instance, in the six-suite apartment house in which this is written, there are seldom more than two people living in the nine "off" months, but there are six refrigerators.

On two blocks of Melrose Avenue, which is Tryon's Gold Coast, there are five apartment houses or lodges, and an 150 guest hotel.

There are now 13 electric refrigerators in those locations, and while there are places for at least five sales in that area, it is probably the only section in town which approaches the saturation point.

If selling electric refrigerators ever becomes a racket, Al Capone might get a hint here. When the backward ice user pays his electric light bill, Mr. Austin at the public service company suggests a Kelvinator; when he pays his telephone bill, it's "Buy a G. E. or a Majestic" from R. H. Brady of the Avant Electric Co., for this firm houses the telephone office; then when he goes to market to buy some good pig, R. O. Andrews waylays him with arguments for a Frigidaire.

Another great reason for the popularity of electric refrigerators in this section is the cheapness of the electricity developed by the mountain streams.

To wit: Mr. Andrews says his 10x12 meat storage room and display case, both Frigidaire cooled, save a \$50 ice bill each month and two or three dollars a day on meat trimmings.

A monthly power bill of \$10 not only covers the operation of the refrigerating machine, but also the meat saw, meat grinder, slicing machine, coffee grinder, electric scales, peanut roaster, lights, radio to entertain customers, and an electric range upon which occasional lunches and Saturday night suppers are cooked for the clerks.

That the future of electric refrigeration is promising not only in Tryon, but throughout this section is indicated by John Paul Lucas, vice president of the Southern Utilities Co. which distributes Kelvinator in this territory.

He says, "We are in the midst of our annual Kelvinator campaign at this time. In spite of the business depression, which appears to be just ending, the indications are that we will have the greatest Kelvinator campaign we have ever conducted."

"We sold approximately 600 last year in the six weeks campaign and are expecting to exceed that number by a considerable margin this year."

Within a radius of 50 miles from Spartanburg, S. C., are 620,000 persons most of whom live in prosperous mill towns such as Gastonia, Shelby and Rutherfordton.

CALIFORNIA LISTS PRODUCTS IN COLD STORAGE

SAN FRANCISCO, Calif.—There were 169,780,504 pounds of food and food products in cold storage in California warehouses Dec. 31, 1930, almost 20,000,000 more pounds of such products than were stored in the warehouses on Sept. 30, 1930, according to the California Department of Public Health.

Of the 169,780,504 pounds of foodstuffs in cold storage at the end of the year 127 million pounds were fresh fruit, 17 million pounds fresh vegetables, 4 million pounds frozen and preserved fruit, 3 million pounds poultry, 3 million pounds fresh meat, 3 million pounds fish and fish products, 5 million pounds of egg meats, 3 million pounds cheese, and nearly 2 million pounds of butter.

These towns are ripe markets for both domestic and commercial installations, to say nothing of hundreds of large plantation homes near power lines.

Even in the mountain districts, where the old window box and cistern cold-bucket hold forth, electric refrigeration pops up.

Columbus, N. C., the tiny county seat of Polk county, boasts a population of 400 hidden somewhere among the hills within its limits, but is five miles from a railroad.

Yet the Avant Electric Co. recently installed a model C-452 G. E. with 45 cu. ft. storage capacity in the grocery department of the Columbus Mercantile Co.

Again in the most lonesome mountain highlands where power lines do not reach, Mr. Andrew of Tyron, placed a refrigerator in the home of Professor Taylor of Sunnyview School. This refrigerator operates on the school's Delco-Light system.

Refrigeration Saves \$100 Per Month



Frigidaire-cooled display counter and meat storage box saves \$50 a month in ice bills and approximately that much more in trimmings, states R. O. Andrews, owner of Andrews Market in Tryon, N. C.

GENERAL FOODS HEAD REPORTS SALES GAIN

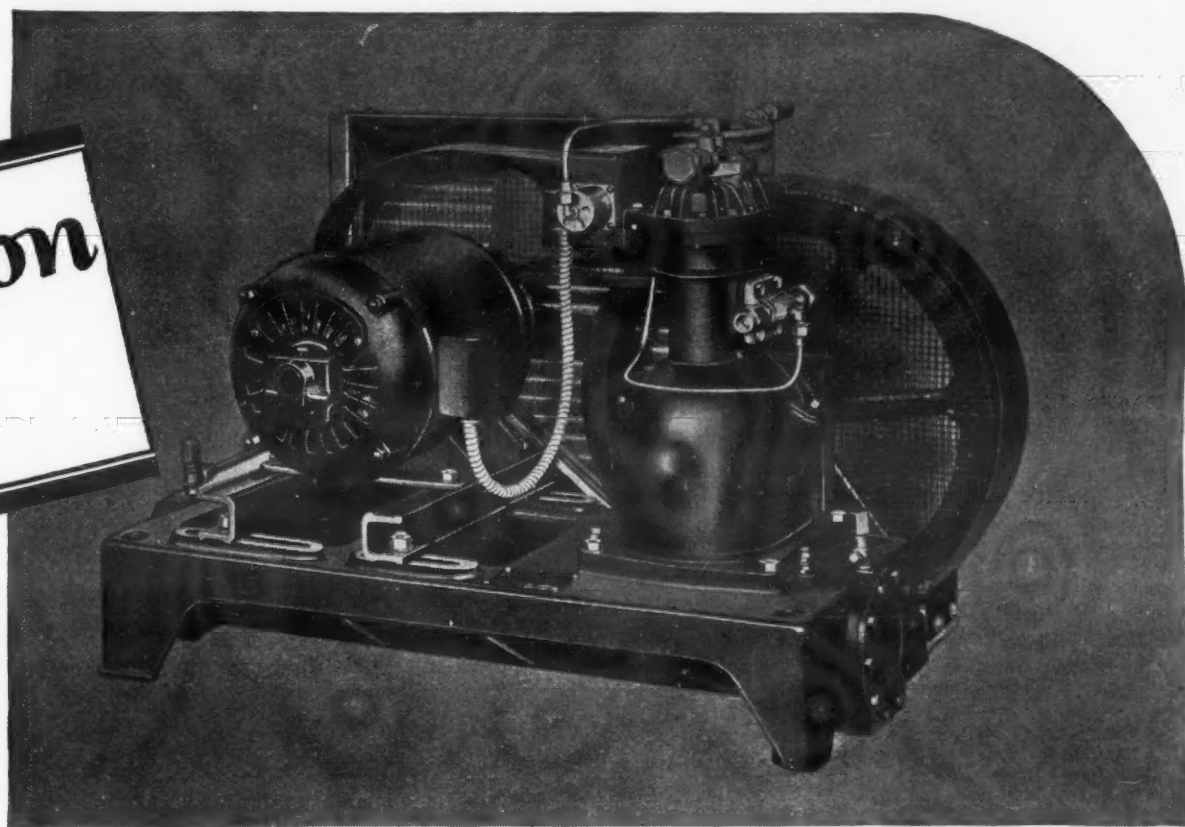
NEW YORK CITY—"General Foods sales for the first two months reflect the gradual improvement in general business conditions," says Colby M. Chester, Jr., president of this corporation.

"Sales for January showed an increase over those for December, while the volume last month was higher than the January figure. Employment during the first quarter continued at close to normal levels."

Chester points out that the ownership of General Foods Corp. is now distributed among 42,773 stockholders, representing an increase of 33 per cent over the 32,065 stockholders of record in February last year.

NEW SERVICE OFFERED

CHICAGO—To serve food manufacturers and voluntary chains in solving marketing, sales development, and distribution problems, the Continental Marketing Corp., with offices in the Merchandise Mart, has been formed.



SERVEL BRINGS YOU THE EXACT MODEL FOR EVERY COMMERCIAL REQUIREMENT

■ 16 new machine units—so flexible, so powerful, that they will meet every demand for fractional-ton refrigeration with their dependable, low-cost performance.

WHATEVER demands your customers might make of electric refrigeration—Servel can meet them!

Whether they be restaurant owners, grocers, meat merchants, florists, dairymen or building operators—whether they want electric refrigeration that will protect foods, preserve perishables or chill beverages—you can install a Servel machine unit that will exactly fill their needs.

The new enlarged line of Servel electric refrigerating machines includes a model for every purpose, for every condition of service and for every capacity, from 130 to 1510 lbs. ice equivalent per day.

RUGGED, ECONOMICAL

Check Servel's advancements with the demands of your sales force, with the suggestions of your service men, with the requirements of your prospects.

Then you will realize that many of these improvements have not previously been available—that these 16 models represent the newest note in 1931 commercial refrigeration.

Tremendous power, scientific efficiency, rugged strength—these are important factors that make Servel easier to sell—simpler to install—more economical to operate.

MODERNIZED REFRIGERATION

Servel gives you oversized, highly efficient condensers of both the water-cooled and air-cooled type—entirely interchangeable so that a water-cooled model can be converted into an air-cooled model for quick delivery.

Universal motor bases permit the mounting of different sizes, types and makes of motors to fit local conditions. Uniformity of valve and tubing sizes simplifies installation and service.

These advanced Servel machines operate with greater efficiency, at a slower speed—resulting in less wear, less operating cost.

SEND FOR FULL DETAILS

And so on, through the long list of definite selling-points—accessibility of all important parts—compactness—multiple Vee-belt drives that insure uninterrupted service—non-sticking snap-action controls—every feature contributes vastly to the simplicity, efficiency and performance of the new Servel models.

Add to these superiorities the fact that you can sell Servel at prices no higher than the cost of ordinary refrigeration.

Finally, send the coupon below for a full description of the new Servel Commercial Line—and complete details of the attractive new Dealer Plan that insures more profitable business for you.

■ QUICK FACTS—Interchangeable Condensers: Highly efficient . . . Multiple Vee-Belt Drives: Insuring uninterrupted service and quiet operation . . . Large Receivers in Bases: Carrying ample charge at all times . . . Snap-Action Controls: Automatic and accurate . . . Economical Operation: Low-speed compressors; greater refrigeration for current used . . . Wide Range of 16 Models: With capacities of 130 to 1510 lbs. ice equivalent per day.

SERVEL COMMERCIAL REFRIGERATION

SERVEL SALES, Inc., Dept. H-2, Evansville, Ind.

Gentlemen: Please send me complete information about SERVEL Refrigeration PLUS.

NAME _____
ADDRESS _____
CITY _____ STATE _____

FRUIT GROWERS OPEN STORE IN CHICAGO

(Concluded from Page 1, Column 1)

white tables are packed with business men.

All through the day both men and women drop in to have a bit of cherry jam or jelly with wafers—or possibly cherry muffins—and top off their snack with a cherry sundae.

The men who come in are inveigled into taking home a vacuum-sealed pound contained of frozen cherries (enough cherries and juice for one good-sized pie). The women are persuaded to do likewise, and are given little folders of cherry recipes.

Begun as an experiment, the Cherry Hut has been deemed so successful by officials of the above mentioned sponsoring organizations that counterparts in other cities are now being contemplated.

DETROIT FOOD MERCHANT VALUES REFRIGERATION

By C. R. Sterritt

DETROIT—Since changing to electric refrigeration about a year and a half ago, Harry Thiele, who operates a grocery and market at 3242 Joy Rd., here, states that electric cooling has reduced his refrigeration costs by 75 per cent.

With twice the business that he has done in years past, Thiele states, that his electric power bill averages about \$10.50 per month for the refrigeration equipment.

Refrigerating the two "Lig-O-nier" display counters, each 10 feet long, and the 8 ft. by 8 ft. by 5 ft. special walk-in cooler, is a 1½ hp. Universal Cooler unit.

Mr. Thiele declares that he used to have an average ice bill of \$30 per month in the Winter season, and \$65 per month in the Summer months.

All his refrigeration equipment is kept at about 35° F. with electricity, while with ice the average was 42 to 45° F., Thiele states. "When using ice the meats were always sticky, which meant more trimming and consequently more waste," declares this food merchant.

DU PONT PLANS TO EXPAND CELLOPHANE PLANT

BUFFALO—Plans were recently announced by the Du Pont Cellophane Co. to expand its cellophane manufacturing plant here at a total cost of approximately \$2,000,000.

Warren Equips Complete Food Market



Arthur's Market in Daytona Beach, Fla., has been equipped with Warren cases and coolers.

REFRIGERATION INSTITUTE RETAINS POOLE AT HELM

(Concluded from Page 1, Column 5)

safely be kept in various states is unfair," Taylor continued. "No scientific reason exists why foods should be unfit in 10 days. Under present conditions, with present improvements and knowledge, they may be kept so that they are wholesome for three years.

"No owner will keep goods in storage any longer than economically necessary, because of the charges and the risk of competition from the next season's production.

"What is vastly more important is the condition of goods when they enter storage. The law should check up on that.

"State laws requiring the marking of cold storage goods and displaying of store signs reading, 'Cold Storage Goods' are also unfair," he declared. "They give the prospective purchaser the implied warning that there is something wrong with the goods.

"However, the industry can only blame itself for some of the popular distrust of frozen goods. Some have indulged in the practice of holding perishable foods until they have seriously deteriorated in the hope of selling them, and then finally freezing them to avoid

total loss. This practice can only be cured by self-discipline.

"Refrigeration is a legitimate public service, in that the supply of foods is increased by prevention of loss through refrigeration, and the prices kept as low as possible through non-producing seasons."

The production and use of dry ice is on the increase, according to a report made by Dr. C. L. Jones of New York, vice president of the Dry Ice Corp. of America. He predicted that it would displace water ice as a transport re-

frigerant for the more frozen commodities.

While the application of solid carbon dioxide as a refrigerant is by no means limited to transportation, the bulk of sale has been for the transportation of ice cream, Jones stated.

Despite the fact that furriers as a body have opposed it from the start, cold storage for furs has steadily advanced into a practical and substantial industry, the convention was told by C. A. Aspinwell, president of the Security Storage Co. of Washington, D. C.

ZEROMATIC DISPLAY CABINETS ANNOUNCED

(Concluded from Page 1, Column 4)

are also offered. The wall cases are intended to be used in conjunction with a display show case for additional storage to avoid the necessity of having a larger walk-in cooler or storage room. These wall cases can also be provided with display doors, and they may thus be used in self-serving grocery stores and markets.

The line of fresh meat and produce cases consist of 8 ft., 10 ft., 12 ft., and 14 ft. lengths of double duty cases; 12 ft. and 14 ft. lengths of double compartment cases, and several different sizes of single duty or top display cases. These cases have the same height, width, and front appearance as the "Zeromatic" cases.

In addition, delicatessen cases, cafeteria self-serve salad cases, florist cases, candy cases and other types of refrigerated cabinets will be added to the line as rapidly as possible, according to M. C. Burnside, manager of the refrigeration division of the concern.

Mr. Burnside announces that zone sales conventions will be held at the principal branches of the Grand Rapids Store Equipment Corp. at an early date with a view of presenting the new line to the entire sales staff.

Sales and service branches of the Rapids Store Equipment Corp. are located at New York City, Chicago, Boston, Philadelphia, Buffalo, Pittsburgh, Baltimore, Detroit, Cleveland, Kansas City, Cincinnati, Atlanta, St. Louis, Dallas, Portland, Los Angeles, San Francisco and Seattle.

Plans have already been laid for exhibits of these cases at the National Grocers' Exposition in Milwaukee on July 6, 7, 8 and 9 and at the International Dairy Convention at Atlantic City this fall.

TO HELP YOU MAKE MORE SALES

If you are a manufacturer, distributor, or dealer, you can use the Refrigerated Food Section as a definite aid in the promotion of commercial sales. Simply see that it reaches your commercial prospects.

In the Refrigerated Food Section will be found news and information of interest to meat merchants and grocers, chain store executives, ice cream manufacturers, druggists, confectioners, restaurant owners, and all food service establishments.

Your prospects will be better informed on the advantages of up-to-date refrigeration equipment by reading the Refrigerated Food Section.

Use the blank below to order extra copies for distribution by your salesmen. Or send to ELECTRIC REFRIGERATION NEWS the names of companies to which you would like to have sample copies sent.—Editor.

Order for Refrigerated Food Section

ELECTRIC REFRIGERATION NEWS
550 Maccabees Bldg., Detroit, Mich.

- ☐ Send _____ copies of Refrigerated Food Section for _____ consecutive issues (\$10 per hundred—10c per copy.)
- ☐ Send Refrigerated Food Section for one year (26 issues—\$1 per year.)

Enclosed find ☐ Check ☐ P. O. Order ☐ Cash.

Name _____

Address _____

Send sample copies Refrigerated Food Section (no charge) to names given below.

Name _____

Address _____

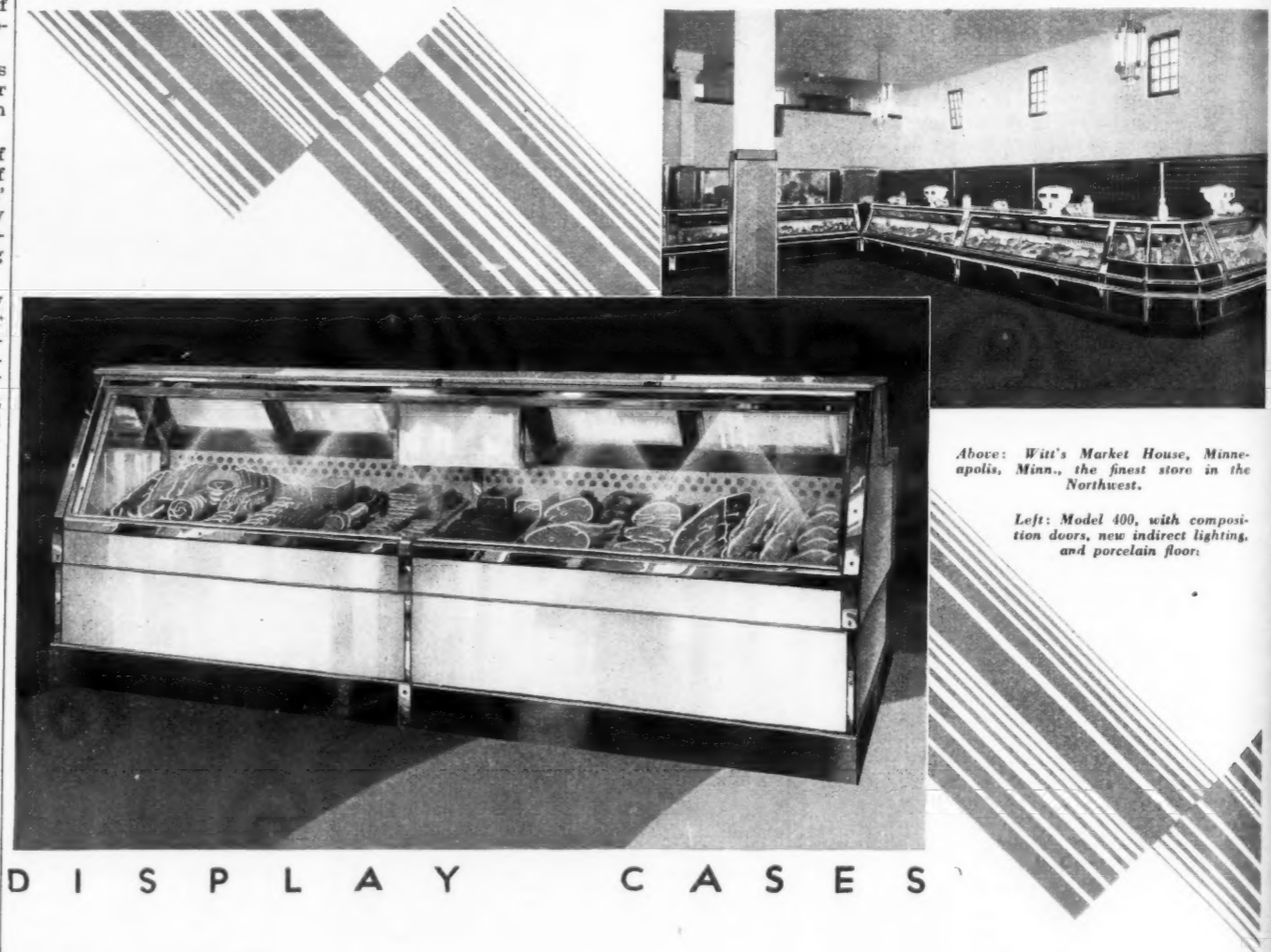
Name _____

Address _____

Name _____

Address _____

5-6-31



Above: Witt's Market House, Minneapolis, Minn., the finest store in the Northwest.

Left: Model 400, with composition doors, new indirect lighting, and porcelain floor.

THE FINEST STORE IN TOWN...

"Presto! from an ordinary corner market to the finest store in town! Sales triple immediately. Inviting display reduces expenses through quick purchases. How we ever managed with our old equipment we do not know"—writes the proud owner of one store. The discriminating merchant knows that Hill equipment makes the better store, the kind he has dreamed of, and even after years of use, still looks new. Hill cases cost no more to own than any other of like specification and size. Frankly—you are paying for Hill fixtures when you use other makes, no matter how much lower the first price. Let our sales and engineering force help you plan and give you some suggestions.

The HILL
Dry-Cold

C.V. HILL & CO. Inc.
TRENTON • NEW JERSEY

ELECTRIC REFRIGERATION NEWS

Registered U. S. Patent Office.

The business newspaper of the refrigeration industry

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TWO DOLLARS PER YEAR

N.E.M.A. APPOINTS COMMITTEES ON PATENTS, TRAFFIC

Legislation, A. S. A. Code, Warranties Discussed By Manufacturers

NEW YORK CITY—Promotion of the A. S. A. Code, legislative matters, a model ordinance, warranties, co-operation with dealers, the ice industry, and frozen food interests were discussed by members of the refrigeration division of the N.E.M.A. in its meeting here April 22. Two subcommittees were appointed on patents and traffic respectively.

S. L. Nicholson of the uniform legislation committee and the industrial policies committee of N. E. M. A., described the work of these committees in matters pertaining to ordinances and legislation, and indicated the value to the division of activities already in progress and their relation to the work the division contemplates undertaking.

Mr. Nicholson offered assistance to the division in matters within the committees' scope and of concern to the refrigeration industry. Discussion indicated that there are several situations of particular interest to the division that will be investigated by these committees.

In conformance with previous request, A. W. Berresford, managing director of N. E. M. A., offered a plan of operation and an estimated budget for divisional promulgation of the A. S. A. safety code for mechanical refrigeration.

The plan embraced the services of an individual who will devote his entire time to the work, and outlined the desirable qualifications of this individual. After detailed consideration of the entire matter, the codes and ordinances committee of the division was instructed to select several candidates for this position, the final selection to be made by Mr. Berresford in consultation with the advisory committee.

A. M. Terry, chairman of the codes and ordinances committee, reported that the committee had under consideration a proposed uniform refrigeration ordinance. After reading the ordinance, he pointed out some phases which the committee felt might be improved.

The division approved the suggested changes and instructed the committee to continue development of the ordinance and when it has reached agreement, to refer the material to the law and legislative committee of N. E. M. A., after which it is to be submitted to the division and to the N. E. M. A. board for final approval.

Col. F. E. Smith, chairman of the commercial practices committee, reported that copies of various forms of warranties had been received from

ROESSLER & HASSLACHER ELECTS NEW OFFICERS

NEW YORK CITY—Officers of the Roessler & Hasslacher Chemical Co. were elected for the following year by the directors in an April 27 meeting.

W. F. Harrington was named chairman of the board, and Hector R. Carveth was elected president. The others officers are: M. J. Brown, vice-president; Colby Dill, vice president and secretary; Milton Kutz and E. A. Rykenboer, vice presidents; Albert Frankel, treasurer; August Heuser, assistant treasurer, and M. D. Fisher, E. A. Howard and J. C. Swain, assistant secretaries.

BRUNSWICK-KROESCHELL UNIT IS USED FOR FUR STORAGE

DETROIT—Two tons of refrigeration are provided by the Brunswick-Kroeschell "Cold Diffuser" just installed by the Wallich Ice Machine Co. in the Mondry Cleaners and Dyers fur storage plant in Grosse Pointe. A temperature of 25° F. is maintained in the 28x18x10 ft. fur room. Cooling is accomplished by a direct expansion ammonia system, and air circulation effected by centrifugal fans located in the top of the unit.

NAMED VICE PRESIDENT

MILWAUKEE—John F. Blackie has been named executive vice president of the National Enameling & Stamping Co.

Small Hotels Offer New Problems

By Terry Mitchell, M. E.
Frick Co.

THE smaller hotels, hospitals, club-houses, and similar establishments have in recent years been following the lead of the larger establishments by installing mechanical refrigeration. With such equipment, the less pretentious or more isolated places are able to give the same high class of service, attract customers and patrons in greater numbers, and so increase their profits.

In applying refrigeration in this field there are numerous cases where more or less difficult engineering problems have to be met and overcome. Questions of adapting the refrigerators to the space requirements, arranging the machinery to use different kinds of power, securing sufficient cold water for condensing purposes, proper control of temperatures in the various boxes and tanks, state laws regarding safety, and other considerations enter into the design of the cooling system.

For example, of the several refrigerators usually needed, those in the kitchen are not only subjected to warm room temperatures, but are opened much oftener than a storage room would be; and the cooks tend to hold the doors open longer. It is now considered good practice to place one of the boxes near the stove to save steps, even though this calls for insulation of the stove and extra insulation for the box.

Short-order boxes, with a series of drawers, fish boxes containing both pipe coils and ice, salad boxes with glass doors—each type calls for special attention.

(Continued on Page 2, Column 4)

FRIGOZONE UNIT COOLS AIR BY EVAPORATION OF WATER

INGLEWOOD, Calif.—Smoot-Holman Co., here, has developed a "Frigozone Cooler" for cooling air in offices and homes by the evaporation of water. The machine is designed for use in connection with any standard electric fan, to be placed behind the "Cooler."

The apparatus is housed in an enameled cabinet in grained wood finish. A handle extending through the front provides the means for rotating an interior cotton, Terry cloth belt which passes through a pan of water in the bottom of the cabinet. Three or four turns of the belt every hour or two is sufficient to keep the belt wet, states H. M. Hunt, general manager of the Kool Kase division of the company. On a hot day, it will evaporate from three to six gallons of water, he says.

A. S. R. E. Report Number

COMPLETE reports of the technical sessions of the spring meeting of the American Society of Refrigerating Engineers which is being held in Kansas City, Wednesday, Thursday, and Friday of this week will be prepared for the next issue of the Engineering Section, May 20, by representatives of the News who are attending the meetings.

FROSKIST BEVERAGE VENDER ANNOUNCED

LOS ANGELES—Electrically cooled drinks of any flavor can be sold at a penny, nickel or dime a cup from the "Froskist" beverage vending machine just placed on the market by Consolidated Engineering, Ltd., of this city. The capacity of the unit is three gallons an hour at 45° F.

The new automatic beverage vender uses a 1-6 hp. Kelvinator compressor, connected to a direct expansion coil which is immersed in a hard brine substance for cooling the liquid. Two inches of cork insulate the cabinet which stands 47 in. high, 22 in. wide and 17 in. deep. The cooling coil is specially designed, surrounding a glass-lined liquid container. The condensing unit is mounted on rubber.

Attached to the top of the cabinet is a standard Dixie cup machine which releases a six-ounce cup when a coin is inserted, and at the same time operates the vending mechanism in the cabinet. It is possible to get only one drink and one cup by the insertion of one coin. The operation of drawing a cup from the cup vender measures the correct amount of drink, and deposits it in the faucet reservoir ready to be drawn by the customer.

The cabinet is made of steel with a baked enamel finish. Exterior fittings are of chromium plated brass. A removable drawer in the cabinet acts as a waste and used-cup receptacle; it is secured by a Yale lock. The entire cabinet is mounted on ball bearings, so that it may be moved easily to different locations.

The machine can be made to measure any desired amount of liquid, and can be operated with either a penny, a nickel or a dime. The penny machine will accept either a nickel or a penny, but the nickel and dime machines will accept only the coin for which they are made.

Distribution of Cold Depends on Air

By J. E. Konze
Engineer, Brunswick-Kroeschell Co.

TEXTBOOKS and technical articles freely discuss the properties of refrigerants, and the characteristics of brine. We repeatedly see references to various methods of evaporating, controlling, or condensing refrigerants, and the methods for circulating brine are discussed in any handbook.

It is hard to realize, however, why equal light has not been thrown on a substance which is used as a conveyor of cold in every application which is normally defined as refrigeration, unless we assume that familiarity breeds the proverbial contempt.

Assuming that refrigeration means the storage or cooling of products in rooms or insulated compartments, the desired cold condition is carried to the various parts of the compartment by means of "Air." The quotation marks are used because the atmosphere in the room consists of something more than the mixture of oxygen and nitrogen which is covered by the strict interpretation of the word. For convenience here air refers to the mixture of air and water vapor with which we are normally familiar. Dry air refers to theoretical air, exclusive of moisture.

Refrigerating equipment as normally calculated or discussed includes very accurate means for producing cold in coils. The coils, or other refrigerating surfaces, are estimated on an approximate basis so as to have capacity to cool the air surrounding them. The transfer of the cold throughout the refrigerated

(Concluded on Page 3, Column 1)

LABORATORY THERMOSTAT CONTROLS TO .01 DEGREE

NEW HAVEN, Conn.—Through the use of a thermostat invented by Prof. Harry W. Foote of Yale University, scientists carrying on research work will be enabled to keep the temperatures with which they are working within .01 degrees. This invention, which has been developed in the Sterling Chemistry Laboratory, is expected to be of value in chemical and research laboratories, where it is frequently necessary for scientists to work in rooms with an even low temperature.

Essentially, the thermostat consists of a small refrigerating unit as a source of cold, controlled in such a way that the temperature will have but the slightest of variations.

ENGINEERS MEET FOR CONVENTION IN KANSAS CITY

A. S. R. E. Spring Meeting Attracting Prominent Refrigeration Men

KANSAS CITY, Mo., May 6—Refrigerating engineers from all over the country are gathering at the Kansas City Athletic Club here today for the annual spring meeting of the American Society of Refrigerating Engineers, Wednesday, Thursday, and Friday. Officials of the society expect a larger attendance than any previous meeting held outside of New York City.

Technical sessions will be held in the mornings, with recreation programs and inspection trips scheduled for the afternoons, and social events in the evenings.

Alvin H. Baer, president of the society, will preside over the opening session Wednesday morning, which is to be held on "New Applications of Refrigeration." Speakers will be Maurice Olchhoff, Natkin Engineering Co. of Kansas City; Harris Pruitt, chief engineer, Texas Pacific Coal and Oil Co.; R. H. Tait, past president of the society, and St. Louis consulting engineer; A. L. Mullergren, consulting engineer of Kansas City; and A. W. Archer, Kansas City architect.

Glenn Muffy, vice president of the society, will preside at Thursday morning's meeting on "Commercial-Domestic Machinery." Papers will be given by the following: J. L. Knight of General Electric; D. P. Heath, consulting engineer of Detroit; H. J. Krampe of Armstrong Cork Co.; C. H. Tanger of Serval; and T. W. Caraway of Schwitzer-Cumins Co., Indianapolis.

"New Thermal Problems" will be discussed in the Friday morning session, with A. W. Oakley, vice president of the society, in the chair. Speakers will be J. C. Irwin, Jr. of the U. S. Cold Storage Co.; F. W. Rabe of Anheuser-Busch Co., St. Louis; Paul Scates of the University of Tennessee; and Dana Burks of the University of Illinois.

REFRIGERATORS BIGGEST LOAD BUILDER IN 1930

NEW YORK CITY—More than a billion kilowatt-hours comprised the load of electrical current used by the nation's electric refrigerators in 1930, according to an analysis recently completed by the N. E. L. A.

According to this analysis, there were 2,625,000 electric refrigerators in use among the 20,400,000 wired homes in the United States at the close of 1930. These machines added more new load than any other domestic electric appliance, and displaced the flatiron as the chief revenue-producing appliance.

The 1930 increase of 336,000,000 watts used by electric refrigerators represents a jump of 45 per cent over that consumed in 1929. The association estimates that the billion-kilowatt load brought a total revenue of \$48,600,000 to public utilities, an increase of \$15,000,000 over the 1930 figures.

HUGE GERMAN AIRPLANE HAS DRY-ZERO INSULATION

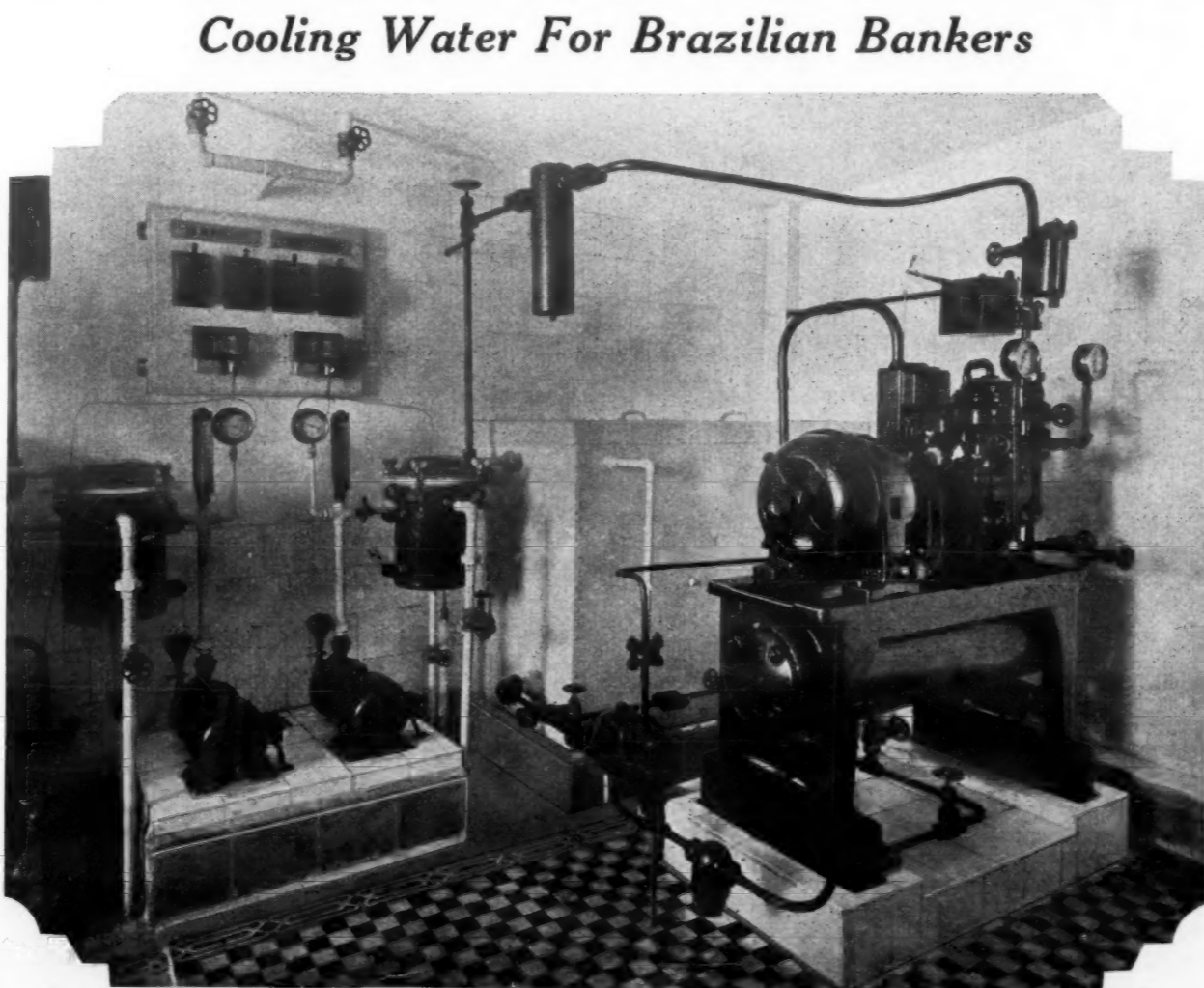
CHICAGO—Companion craft to the world's largest amphibian plane, DO-X, the Dornier DO-S has made its appearance in Germany. This monster airplane has a cabin which is insulated against cold with Dry-Zero, according to Harvey E. Lindsay, president of the Dry-Zero Corp.

Douglas, Curtis-Condor, and Fairchild airplanes are also using this insulation, Lindsay states.

Another new Dry-Zero user is the Relay Motors Corp., which is building insulated truck bodies to be used for the transportation of Kraft-Phoenix cheese.

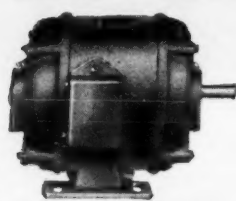
NEW IDAHO HOTEL INSTALLS YORK 5-TON SYSTEM

BOISE, Idaho—The new Hotel Boise, recently completed in this city at a cost of \$800,000, has been equipped with a 5-ton refrigeration system. The installation was made by the York Refrigeration Co. of Seattle, Wash.



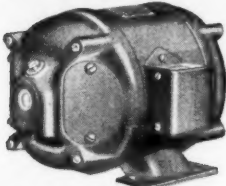
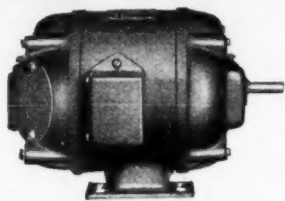
Frick direct-drive water cooling equipment in the Bank of Commerce and Industry, Rio de Janeiro

THEY KEEP A-RUNNING



1/6 Horse Power Century Type SC Squirrel Cage Induction 3 and 2 Phase 60 Cycle, 1750 R.P.M. Motor.

At right: 1/6 Horse Power Century Type RS Repulsion Start Induction Single Phase 60 Cycle, 1750 R.P.M. Motor.



1/6 Horse Power Century Direct Current, 1750 R.P.M. Motor.



1/6 Horse Power Century Type SP Split Phase Induction 60 Cycle, 1750 R.P.M. Motor.

INTERCHANGEABLE Mounting Dimensions

The mounting dimensions of the Century Motors here illustrated are interchangeable. . . . The steel feet welded to the frame insure accurate and permanent mounting—sub-bases are eliminated by belt-adjustment slots in the feet. . . . Unusual protection against the entrance of water, dirt and other falling objects is provided by the end bracket construction. . . . Century Motors are built in standard sizes from 1/8 to 200 horsepower.

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QUICK FROZEN FOOD CASE MADE IN WEST

LOS ANGELES—A refrigerated display case which is equipped to handle quick frozen foods, and which also serves as a standard display case for regular meats and other foods, is being introduced by the Kelvinator Los Angeles Co., of this city.

Known as the "Better-Built Quick-Freezer" case, it is one that has been devised by A. C. Smith of the Kelvinator Los Angeles organization, and is being built according to Kelvinator specifications by the Commercial Fixture Co., also of this city.

There are four plies of glass in the display windows. Four inches of cork insulate the case. Waterproof; casein glue, mortized and tenoned joints are used instead of nails.

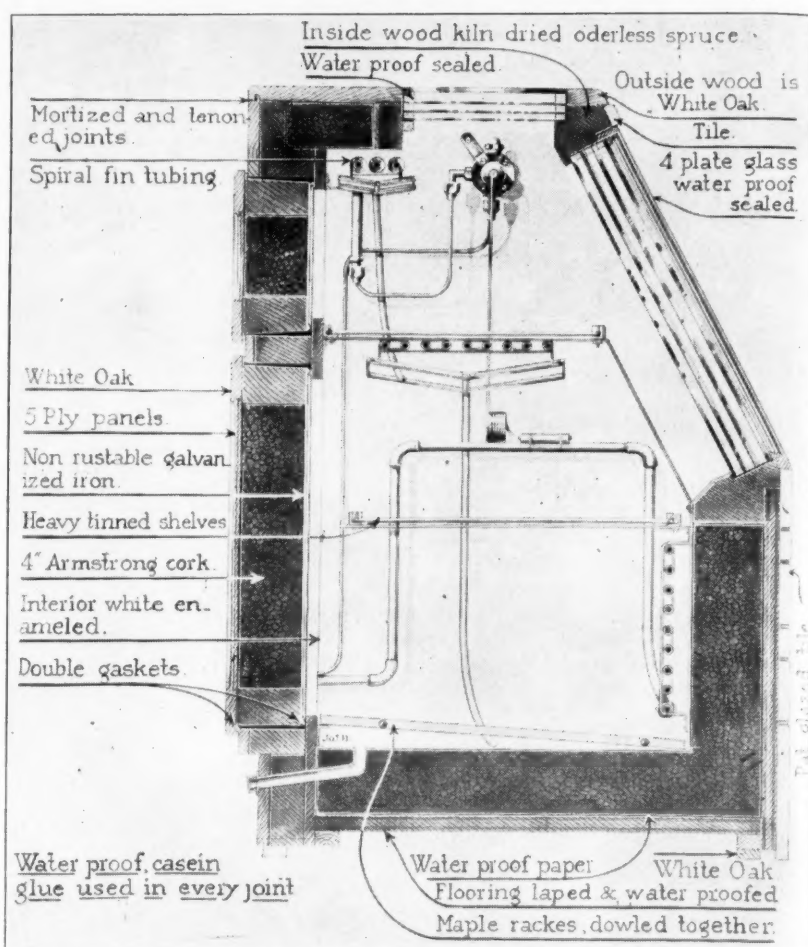
CATALOGUE LISTS REPAIR PARTS FOR REFRIGERATORS

LOS ANGELES—Service men will be interested in the new 96-page catalogue just issued by Refrigeration Service, Inc., of this city, in which are listed many of the repair parts and accessories needed in the maintenance of electric refrigerators.

Among the supplies shown are valves, tubing, fittings, gaskets, motor brushes, thermometers, belts, tools and controls. Most of the equipment is illustrated, and all is completely described.

The last few pages of the booklet provide practical charts and estimating procedures for figuring refrigeration loads, instructions for emergency treatment in case of refrigerant accidents, descriptions of the seal-lapping operations, and refrigerant data.

New Frozen Food Case



Cross sectional view of "Quickfreezer" display case

Small Hotel Refrigeration Offers New Problems

(Continued from Page 1, Column 2)
tion, and most likely requires a special evaporator, built-to-suit.

For storage of meats, dairy products, fruits and vegetables, until they are needed in the kitchen, walk-in boxes held at different temperatures are provided. Galvanized metal shelving is preferred for these, galvanized evaporating surface being placed on the walls behind the shelf frames.

Special pantry refrigerators, dietician's box, a small box for serums, or a mortuary refrigerator, may also have to be cooled. Each box should be equipped with its own shut off valves on the feed and return pipes to the coils, for defrosting without shutting down the entire plant.

Small boxes may be fitted with refrigerating sections containing ice trays. As the establishment grows in size, a number of auxiliary boxes, including one for the baker, a freezer for large meats and fish, a refrigerator for garbage, a compartment for the soda fountain, a display case for the flower shop, and others, are often added in turn.

For hotels, hospitals, clubs and institutions so situated that they cannot purchase ice economically, it is often necessary to install a small ice-making system. This is nearly always placed in the basement, near the refrigerating machine; the ice is frozen in cans holding 25, 50 or 100 lbs. of ice, each.

The ice is cut into cubes or broken before being sent up to the pantry and dining rooms. An ice storage box, large enough to hold a day or two's supply only, is sometimes erected alongside the ice tank.

A favorite plan is to use the ice-making tank as a combination brine cooling and storage tank, its dimensions being suitably increased to take care of the additional work. The brine is pumped through the cooling coils in the various boxes, and returned to the tank, which is fitted with either direct-expansion coils or a shell type brine cooler.

This system offers a number of advantages over the straight direct-expansion scheme, particularly in the case with which the temperatures in the different places can be regulated. Brine control valves, worked by thermostats, are placed in the lines to each box.

The brine also makes an ideal refrigerant for water cooling duty, where a central tank is installed in the machine room, and the water is piped to each floor of the hospital or to hotel rooms.

The danger of freezing up the water tank is more readily guarded against with the brine coils, although direct-expansion is, of course, extensively used on drinking water systems where several other loads do not have to be carried at different temperatures by the same machine.

The distributing piping should carry the cold circulating water as close to the fountain or other outlets as possible, so that a quantity of water will not lie in the ends of the branch lines and become warm. Balancing of the head against which the water circulating pump works is also important, and for this reason a closed pressure tank, with removable cover, is preferable for higher buildings.

Occasionally an establishment finds
(Concluded on Page 3, Column 4)

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is no known coating for a black sheet equal to Spelter [zinc]



Spelter (zinc) is applied to the black sheet by the Hot Patented Process, then Heat Treated at a higher degree of temperature thereby fusing the coating with the base producing a highly Rust-Resisting sheet.

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Manufacturers of constant pressure expansion valves, thermo valves, high pressure float valves, liquid magnetic stop valves, and suction line stop valves.

THERMAL PROPERTIES OF AIR ARE OUTLINED

(Concluded from Page 1, Column 4)
space is estimated on even more approximate "rules of thumb."

This condition was natural, perhaps, while the vast majority of refrigerating installations were limited to gravity air circulation. The movement of the air was dependent upon several assumptions, so that an over-all assumption covering the total distribution of cold was a very practical simplification in most cases.

Now, however, that cold diffusion by means of unit evaporators is available for a wide range of applications, it is possible to eliminate much of the approximation in the distribution of cold.

Admission of air to the clan of recognized refrigerating agents would be of value not only in controlled air flow, but also in securing the greatest efficiency from gravity air circulation. Cold diffusion means the definite distribution of cold by controlled and directed air flow.

Change in Viewpoint

The change in viewpoint with regard to air, is due to the fact that with controlled air flow, the velocity of the air over the refrigerating coils is known to the designer, and a definite quantity of cooled air is directed towards the desired sections of the compartment. There is little limitation due to the shape of the compartment or the location of the evaporator.

With gravity air flow, however, the movement of the air is dependent upon the difference in weight between air of different temperatures. Not only does this limit the compartment arrangement and the effects which can be obtained, but there is little force behind the movement of the air so that it is materially affected by conditions within the room which are difficult to anticipate.

This need not appear elementary or superfluous, when it is considered that in a certain class of eight men of college senior grade, seven had difficulty in reading a psychrometric chart when confronted with a special but simple problem involving air.

Dry air has a specific heat at constant pressure of practically 0.24. The volume of one lb., however, is large and variable. Assuming an average temperature of 40°, the average volume of a pound is 12.59 cu. ft. If the air temperature changes 4 degrees, it will be necessary to move 12.59 or 13.1 cu. ft. of air

to transfer one B.t.u. To distribute the effect of melting only one pound of ice will require the movement of 144x13.1 or 1,890 cu. ft. of air.

One-half ton is a frequently specified refrigerating capacity. It requires the absorption at the evaporator of only 100 B.t.u. per minute, but this means a movement of 1,310 cu. ft. of dry air per minute.

Actually, all of the heat absorbed by the evaporator is not carried by the

dry air, but even though the portion so carried is only 75 per cent, the importance of definitely moving the air and of moving it to the right portions of the compartment are apparent.

The change in temperature of the air which is allowable if required conditions are to be met is somewhat a matter of judgment, but when this judgment is based on a definite air flow, the determination is more easily made. The more exacting requirements as to uniform temperatures which are now being expressed, limit the temperature change within the refrigerated compartment to relatively low values.

Air Movement Important

Limitation of temperature difference means limited change in air density, and reduces the force available to distribute air by gravity. This makes the advantages of cold diffusion more definite, and increases the importance of the definite movement of air as a part of refrigerating considerations.

The other portion of air definitely comes into the picture not only from the viewpoint of direct moisture effects, but from the viewpoint of heat transfer.

Air as we know it, is mixed with water vapor. For general purposes, it has been found most convenient to consider that air is saturated or partly saturated with moisture. The information with regard to air will probably be a little more available for refrigerating purposes if we consider it from the viewpoint of basic physics, and forget for the moment the terms *saturated air* and *relative humidity*. As a matter of fact, it seems quite probable that all problems related to refrigeration will be more simple and clear if at least the latter term were eliminated entirely.

In our problems, air is a gas and the heat effects are sensible only. Temperature and specific heat tell the entire story in which we are interested.

The effect on the water vapor of passing the air across a surface colder than the dewpoint is the same as passing 80° water through the tubes of a condenser containing a refrigerant at a pressure which will cause condensation at 80°. Vapor condenses.

Dewpoint will explain the behavior of the moisture without reference to the air. The essential factors can readily be obtained from psychrometric tables or charts which give dewpoints, and many cases of confusion will be avoided if no attempt is made to transfer readings or results in terms of relative humidity.

The interesting facts from the viewpoint of the mechanics of refrigeration are the temperature at which moisture will deposit as water or ice, and the quantity of vapor in the air before and after it has been chilled to a certain temperature. The specific heat of the vapor is negligible in comparison to its latent heat, or the specific heat of the corresponding quantity of air.

Changes of vapor pressure due to changes of temperature are not material for our purposes. We can say then that temperature, latent heat, and dewpoint tell the story of the vapor in the mixture. Since dewpoint is directly related to weight of moisture, these can be considered as one factor.

Since desired conditions in a refrigerator may require a dewpoint within five degrees of the average refrigerator temperature, the necessity of uniform temperature and good air circulation are apparent. Wet refrigerators are frequently caused by temperature changes or "back wash" which brings air against walls of a few degrees colder temperature.

The latent heat of water vapor is approximately 1,070 B. t. u. for refrigerator conditions. Water vapor may enter the compartment mixed with the air that enters through the doors. A certain amount, however, is added by water which evaporates from the surface of the walls or from the product.

While this is important in a consideration of dehydration of the product, it must not be assumed that moisture gain in the room means appreciable dehydration. Even when the moisture lost from the product is well below the most optimistic minimum, it may appreciably affect the air within the room.

Every pound of water which evaporates in the room means that 1,070 B. t. u. normally considered as sensible heat, actually reaches the coils as latent heat, and more water vapor is liberated than can be contained in 2,000 cu. ft. of space at refrigerating temperatures. This means that when definite rates of "air" flow can be assumed in addition to temperatures and refrigerating load, a much more accurate estimate can be made of conditions within the compartment.

The moisture added to the room is variable, of course, so that it is usually most practical to assume average conditions, rather than attempt to correct for variations. There is a natural stability, however, because as the moisture evaporated in the room increases, the tendency to evaporate decreases.

With definite air flow as provided by cold diffusion, therefore, it is possible not only to diffuse cold uniformly throughout the room, but to obtain a very practical control of moisture conditions.

SMALL HOTELS OFFER DIFFICULT PROBLEMS

(Concluded from Page 2, Column 5)

itself obliged to make ice cream as well as ice; this is readily accomplished by use of either a brine or direct-expansion freezer. Within recent years the latter type has been gaining in popularity, and in conjunction with a float-accumulator can be made to freeze the mix very quickly and efficiently.

Refrigerating machines of the combined type are, as a rule, able to handle the class of work outlined; most of the loads encountered are intermittent in character, and a unit with a capacity of from one to five tons is generally large enough for these smaller establishments.

Carbon dioxide machines are used for many of the hospital and hotel jobs placed through architects, while a great many of these establishments are using ammonia with entire satisfaction.

Electric drive, making possible full automatic control, is naturally used wherever suitable current is available. Gas-engine drive and steam drive are employed in more isolated places, the engines being direct-connected to the compressors in some cases, even when the machine is a combined unit.

In the latter case, the machine is generally placed in a separate power house. Float valve control, also thermal control, magnetic control or pressure reducing expansion valves are employed to regulate the ammonia feed and distribution.

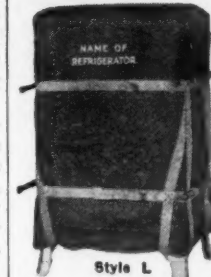
Automatic regulators for the condensing water are fitted as standard equipment on the new combined refrigerating machines, as are automatic motor starters. V-belt drives are found on most makes, particularly in sizes above ½ ton refrigeration, in which case direct drive from the motor has been successfully used.

Metal Stampings Unit Bases and Guards

Household Refrigerator Metal Panels—Exterior or Inside Panels and Food Compartments. Louvered Panels—Special Trays or Panels—Water Cooler Panels.

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Mastercraft Refrigerator Pad and Carrying Harness



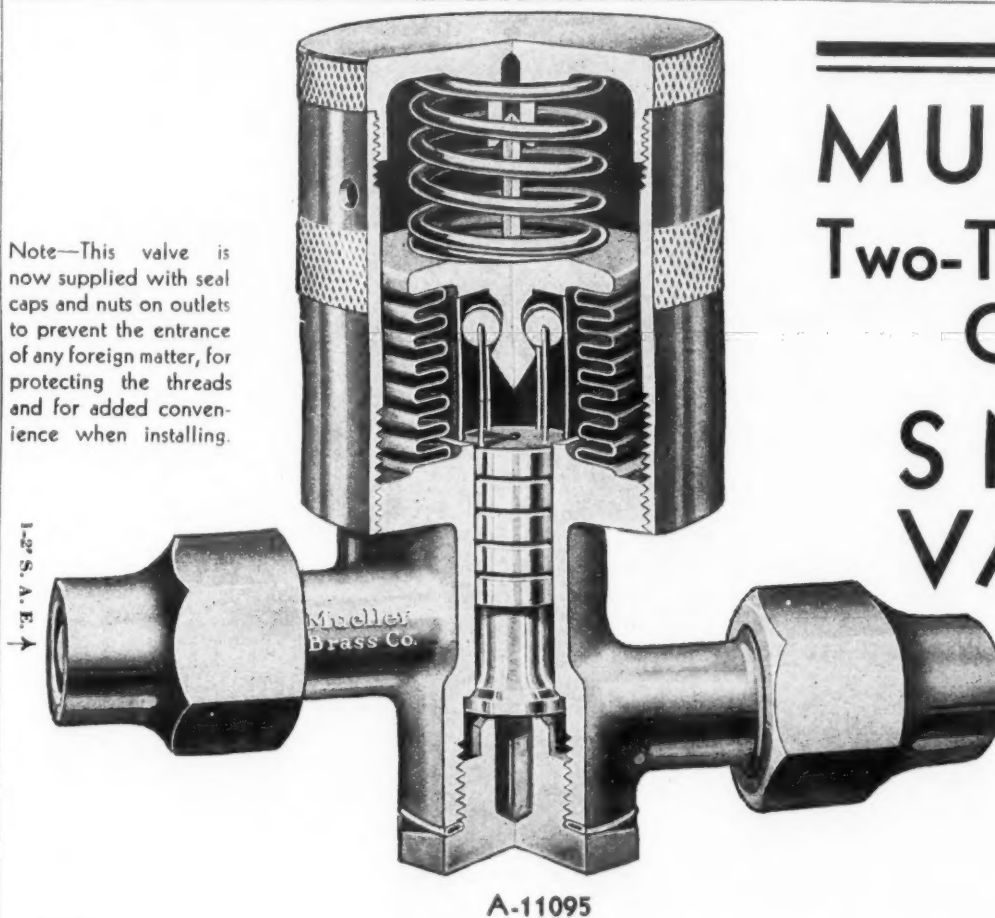
Made for all makes, models and sizes of automatic refrigerators. One size of both pad and harness takes care of many sizes of refrigerators. Illustration shows style L, harness adjustable for refrigerators with legs. For models without legs see our style F. The most sturdy, simple and inexpensive unit made. Adopted by the leading manufacturers. Make of refrigerator lettered in brilliant design. Write for special booklet.

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DETROIT FORGING Company Michigan
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MUELLER Two-Temperature Control SNAP VALVE



Note—This valve is now supplied with seal caps and nuts on outlets to prevent the entrance of any foreign matter, for protecting the threads and for added convenience when installing.

THIS valve is so constructed as to make it a real aid to the service man. By merely turning the outside knurled case he can raise or lower the temperature without danger of losing the differential which was previously properly set.

The differential is built into the valve and cannot be changed.

The temperature range may be changed

without the necessity of a recheck or numerous visits of the service man. Simplicity of construction insures a long and trouble proof life.

The snap action feature prevents seat erosion and assures uniform performance.

The body is a brass forging, thus making it seep proof and free from defects.

NOTE: WHEN ORDERING SPECIFY "CUT-IN" AND "CUT-OUT" READINGS.

Mueller Brass Co. Valves and Fittings are approved by the Underwriters' Laboratories of Chicago.

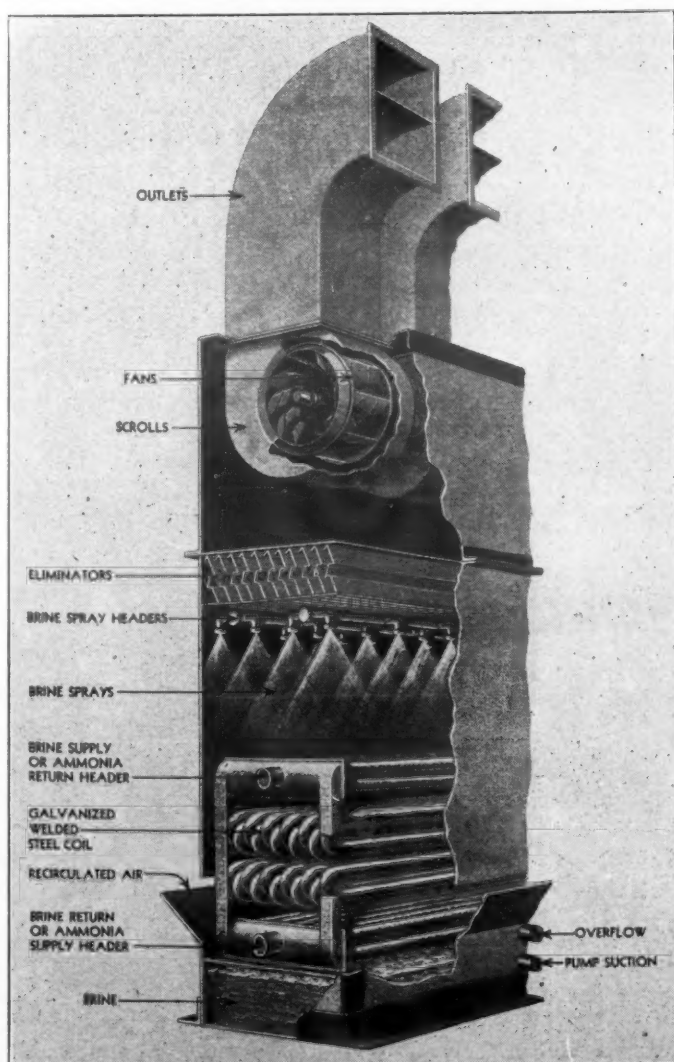
We manufacture a complete line of valves and fittings and can supply your every requirement.

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PORT HURON, MICHIGAN

THREE GENERATIONS OF BRASS MAKING

Brine Spray Type Cold Diffuser



This Brunswick-Kroeschell unit is used for applications which require temperatures below 33° F. and where excessive moisture is given off by the products stored.

DETERMINATION OF HEAT TRANSFER

New Data in Evaporator Design Revealed By Arco Engineer

By Daniel D. Wile,

Accessories Division Laboratories, American Radiator Co., Detroit

IN ORDER to design the new dry system cooling unit, the Castincoil, we found it necessary to determine certain coefficients of heat transfer, and I believe that many engineers are interested in the methods of test that we used, as well as the actual figures obtained.

It might be well first to explain what this cooling unit looks like, how it is manufactured, and some of its features, so that the reason for its development will be appreciated, and the importance of the technical information will be understood.

This new cooling unit consists of an aluminum casting containing a coil of

tively short length of tubing, with the coils grouped near the front and back of the unit. The desired amount of external surface is obtained by means of ribs that are cast as an integral part of the unit.

In the manufacture of this unit, the coil is formed to exact size, and has substantial inlet and outlet connections brazed to its ends. This coil is held

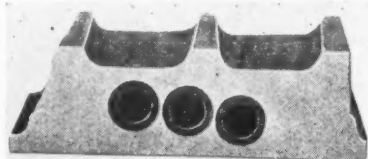


Fig. 2, Cross Section of Coil

securely in the mold by aluminum chaplets, so that the tubing is located centrally and becomes uniformly covered with the casting.

Fig. 2 shows an actual photograph of a cross section through a portion of the coils. The tubing is securely gripped by the aluminum and forms an integral part of the casting.

This construction provides a cooling unit that we believe to be practically indestructible. In the past few years this factor has become very important.

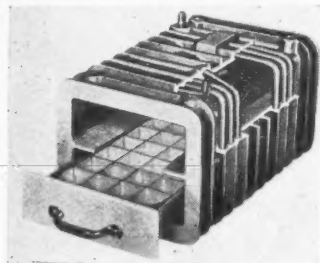


Fig. 1, Construction of Evaporator

copper tubing for the flow of refrigerant. Fig. 1 will give you an idea of this construction. Note that we use a rela-

At the recent hearings in Chicago, the health commissioner laid particular stress on the fact that cooling units should be able to stand the abuse of screw drivers, ice picks, or other implements that might be used to remove ice trays or scrape off frost. The aluminum casting removes entirely the hazard of such damage because the coil is at no point exposed.

At the beginning of this development, we made a laboratory investigation to determine the rate of heat transfer for the aluminum surface, and also the rate of heat transfer that exists inside the copper tubing. From these tests we were able to determine the proper amount of external surface, and the required amount of coil.

Most dry system evaporators use comparatively long lengths of tubing, and therefore expose much surface to the refrigerant, so that the rate of heat transfer at that point is not important.

In this case, we desired to use as little tubing as possible without affecting the efficiency of the unit, and it was therefore necessary to know what effect the different lengths of tubing would have.

There is practically no information available on the rate of heat transfer inside of small tubing, under the conditions that exist in the domestic refrigerator cooling unit. There are several formulas for calculating the heat transfer of liquids flowing through tubes but the problem is very different in this case. At no point in the evaporator do we have a flow of solid liquid, even at the very entrance to the evaporator, before any useful heat has been absorbed, there is a very small proportion of liquid.

In Fig. 3, we have attempted to show this condition graphically. Liquid re-

frigerant at 80° F. enters the expansion valve and expands into the evaporator coil at 12° F.

Part of the liquid, 17 per cent, is immediately vaporized in order to cool the refrigerant from 80° to 12°. That is, 17 per cent by weight; by volume the tube contains only 2 per cent liquid and 98 per cent gas. These figures are for

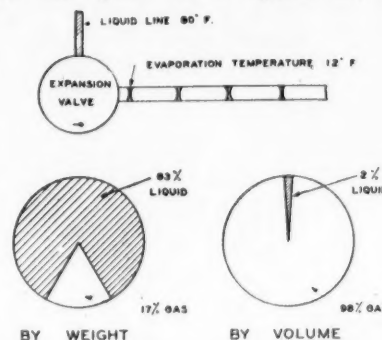


Fig. 3, Liquid-Gas Proportions Entering Evaporator

methyl chloride. With sulphur dioxide the proportion of liquid is still less and amounts to only 1 per cent by volume.

This condition is not peculiar to expansion valves, the same proportions exist at the needle of a float valve or any other type of valve that may be used to expand the refrigerant.

Liquid may flow through the coil of an evaporator in two different manners as shown in Fig. 4A and Fig. 4B. In the case of small tubing and high gas velocity, the liquid does not have a chance to settle out and is carried along as a mixture with the gas.

With large tubing and slow gas velocity the condition of heat transfer is quite different, because the liquid settles out and flows along the bottom of the tube.

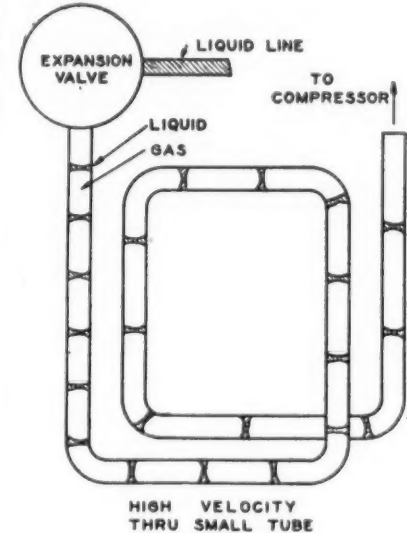


Fig. 4B, Refrigerant Flow Through Large Tube

It is such variables as these that make it difficult to express the rate of heat transfer by means of general formulas, and the best we can do is to

give the results obtained for the particular conditions investigated.

Fig. 5 shows the test apparatus that was used to determine the rate of heat transfer from refrigerant to the inside of copper tubing. The coil of tubing to be tested was placed in an insulated tank filled with brine.

A motor-driven propeller produced circulation, and, in order to satisfy ourselves that temperature difference between tubing and brine was of a negligible value, we speeded up the propeller until further increase had no effect on the test results.

The circulation was so violent that the tank had to be well covered in order to prevent the brine from being thrown out of the tank. For this test we used 1/6 hp. sulphur dioxide and methyl chloride compressors, and measured the amount of refrigeration by means of the usual measuring drums.

An automatic expansion valve was used to maintain constant low side pressure of 10 lbs. for methyl chloride, and 1.6 in. of vacuum for sulphur dioxide, these pressures being equivalent to 12° F. evaporation temperature.

The expansion valve, as well as all tubing above the brine level, was well

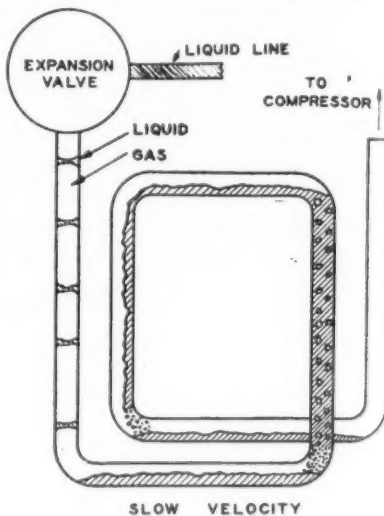


Fig. 4A, Refrigerant Flow Through Small Tube

insulated so as to confine the refrigeration to that measured length of tubing below the brine level.

The method of test consisted in operating the compressor at a constant rate, and adjusting the brine temperature by means of the electric heater and rheostat, until the refrigerant was completely vaporized at the end of the coil.

Thermocouples on the suction line indicated when this condition was reached, and we found it quite easy to adjust the brine temperature so as to maintain the lower couple at saturation temperature, and the top couple at a few degrees superheat. Thermocouples also measured the liquid line temperature, and evaporation temperature.

Pressure connections, not shown in the drawing, were used to measure the pressure drop through the tubing in

(Continued on Opposite Page)



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Use this
nationwide engineering service
to help you build sales

The recent acquisition of Time-O-Stat Controls Company by Minneapolis-Honeywell Regulator Company has greatly expanded the engineering and service facilities back of Time-O-Stat automatic refrigeration controls.

Factory branches in each of the cities shown in the map above, and distributors in other principal cities from Coast to Coast, stand ready

to help you build sales. They offer you the complete line of Time-O-Stat temperature and pressure controls, the same controls which have proved their dependability in every type of application. The Time-O-Stat line has not been changed. It will be augmented from time to time in the future, as Time-O-Stat engineers develop new controls for automatic refrigeration.

TIME-O-STAT

Controls Division of

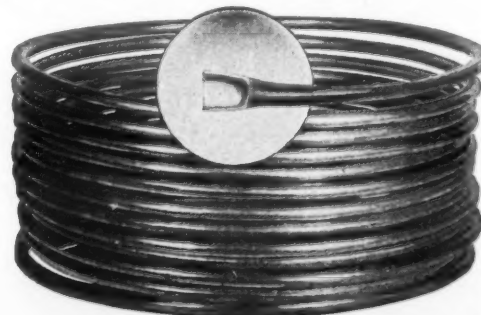
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RATES MARKS CASTINCOIL RESEARCH

EVAPORATOR DESIGN TRACED BY D. D. WILE

(Continued from Opposite Page)

connection with mercury columns. We tried various positions for the coil, and

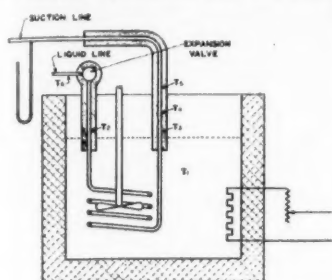


Fig. 5, Apparatus for Conductivity Test

found no difference in the results whether the coils were vertical or horizontal.

It also made no difference if the refrigerant entered at the bottom or top of the coil. This, of course, would not be true for large tubing with slow gas velocity.

Fig. 6 shows the results obtained for 1/4 and 3/8 in. tubing of 10 and 20 ft. lengths for both sulphur dioxide and methyl chloride. The refrigerating rates were nearly equal: 130 lbs. I.M.E. for methyl chloride, and 120 lbs. I.M.E. for sulphur dioxide.

Note that the 1/4 in. tubing in lengths of 10 and 20 ft. transmitted 375 and 352 B. t. u. per ° F., per hour, per sq. ft. of internal surface, or 18.3 and 17.3 B. t. u.

evaporator having 10 ft. of 3/8 in. tubing, and a brine tank having 25 ft. of 7/16 in. tubing, were also tested by submerging them into the rapidly agitated test tank. Note that the temperature difference between refrigerant and the outside surface of the aluminum casting was 3.5°, or only slightly greater than the difference between refrigerant and tubing.

These results convinced us that the bond between tubing and aluminum gave almost perfect heat conduction. Temperature drop through the wall of the copper tubing, and through the aluminum casting is very small because of the high heat conductivity of these materials.

With the brine tank, the temperature difference between refrigerant and outside surface was 11.3° F. We tested this particular tank because it represented good brine tank design. This large temperature drop is due to the poor circulation that exists inside a brine tank. The actual conductivity of brine compared to aluminum is in the ratio of 1 to 500.

With sulphur dioxide the rate of heat transfer inside the tubing was less than one-half that obtained with methyl chloride. I have already mentioned that the proportion of liquid to gas by volume was less with sulphur dioxide than with methyl chloride. That condition does not explain the large difference in heat transfer, because with sulphur dioxide there is increased velocity that tends to improve heat transfer.

The difference is probably due to an oil film which clings to the wall of the tubing when using sulphur dioxide, but does not exist with methyl chloride, because oil and liquid methyl are soluble.

NOMINAL OUTSIDE DIAMETER TUBING Inches	LENGTH OF TUBING Feet	METHYL CHLORIDE				SULPHUR DIOXIDE			
		130 Lbs. I.M.E. - 780 BTU per hr. 10 Lbs. gauge press. - 12° F.		120 Lbs. I.M.E. - 720 BTU per hr. 1.6 ins. vac. - 12° F.		130 Lbs. I.M.E. - 780 BTU per hr. 10 Lbs. gauge press. - 12° F.		120 Lbs. I.M.E. - 720 BTU per hr. 1.6 ins. vac. - 12° F.	
		PRESSURE DROP Lbs.	TEMP. DROP ° F.	HEAT TRANSFER BTU/Hr./° F.	PER SQ. FT. INTERNAL SURFACE	PRESSURE DROP Lbs.	TEMP. DROP ° F.	HEAT TRANSFER BTU/Hr./° F.	PER SQ. FT. INTERNAL SURFACE
1/4	10	0.4	4.25	375	18.3	0.49	12.4	119	5.9
	20	0.76	2.25	352	17.3				
3/8	10	0.15	3.35	285	23.3	0.17	7.3	121	10.0
	20	0.25	1.76	274	22.3				
ALUMINUM UNIT 3/8	10	0.15	3.5			0.22	6.6		
BRINE TANK 7/16	25	0.9	11.3			1.16	15.6		

Fig. 6, Heat Transfer Rates From Refrigerant to Tubing

based on the lineal foot of tubing. These values are over 30 per cent higher than the coefficients of 285 and 274 obtained for the 3/8 in. tubing. As a result of these tests we felt that it might be desirable to use 1/4 in. tubing.

The industry, however, is used to the larger size tubing for cooling coils, and we finally designed the two tray unit with 1 1/2 ft. of 3/8 in. coil. Then, when units were put out into field operation, everybody that saw them said they wouldn't work because there wasn't enough tubing. They were accustomed to seeing brine tanks with 25 to 50 ft. of even larger size tubing, and the sad part of the story is that they did not work so very good.

They either frosted back the suction line, or failed to freeze ice cubes. Research engineers can appreciate that the sales department didn't waste any words telling us about it, and we built units having additional tubing.

Then it was the laboratory's turn to say "I told you so," because the additional tubing didn't make any noticeable improvement. The trouble was finally corrected by finding the proper location for the thermostat control, and I will discuss that later.

An early sample of the aluminum

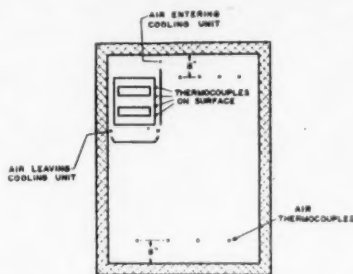


Fig. 7, Temperature Readings in Refrigerator Test

We decided to set up a test that would be independent of the type of cabinet or size of compressor, a test that would maintain steady conditions, and control all variables affecting the capacity of the evaporator.

We first tested two representative makes of domestic refrigerators in order to determine the average temperatures existing in the food compartments. Fig. 7 shows the location of temperature readings for this preliminary test.

Thermocouples were located in the food space 5 in. from the top, and 5 in.

EVAPORATOR SURFACE	- 23° F.
TOP OF FOOD SPACE	- 51° F.
BOTTOM OF FOOD SPACE	- 46° F.
EVAPORATION	- 12° F.
AIR OVER BAFFLE	- 54° F.
AIR LEAVING BAFFLE	- 42° F.

Fig. 8, Average Temperatures in Refrigerator

from the bottom; also above and below the baffle, to measure air temperature entering and leaving the cooling unit. Eight thermocouples were located on the surface of the evaporators in order to measure the average surface temperature.

Fig. 8 shows the average temperatures recorded for the two refrigerators when operating in 100° room temperature. Evaporator surface was 23°, or

average box temperature. These results were used as a basis for the temperature conditions in our investigation of heat transfer.

Fig. 9 shows the general arrangement of apparatus for determining the refrigerating capacity of evaporators. For the test chamber we used a 7 cu. ft. total contents of refrigerator cabinet.

Air temperature was measured entering and leaving the cooling unit, and

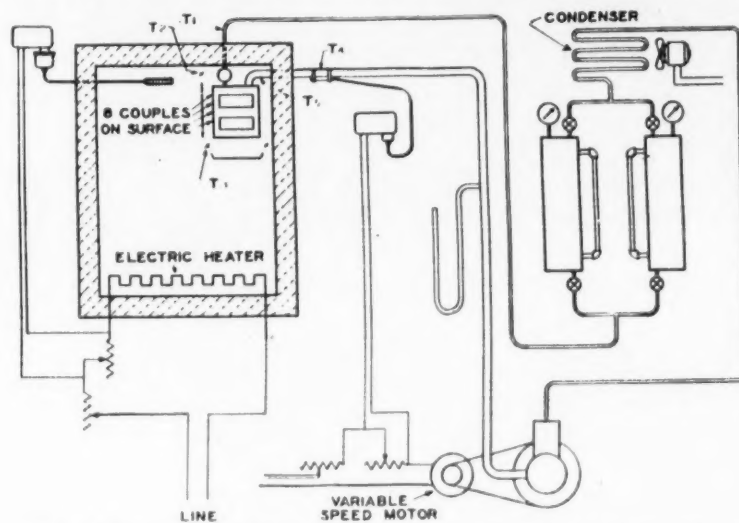


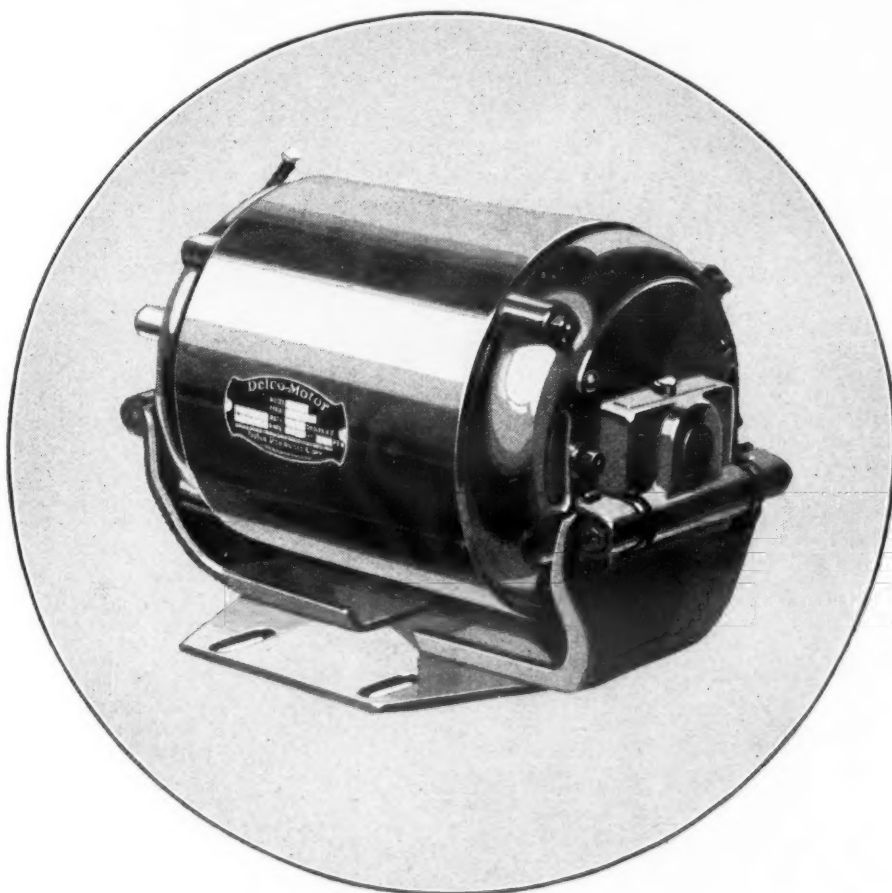
Fig. 9, Experimental Set-up for Testing Capacity of Evaporators

11° above evaporation temperature. Box temperatures were 51° at the top, and 46° at the bottom. Air entered the cooling unit at 54° and left at 42°.

An interesting check on the location of thermocouples is the fact that the average temperature entering and leaving the cooling unit was equal to the

the desired temperature maintained with an electric heater which was regulated by a rheostat. An important detail of this heater is its construction of many coils of wire that covered the entire bottom of the cabinet. By this means we eliminated convection currents. (Concluded on Page 7 Column 1)

A REFRIGERATOR MOTOR IS DIFFERENT



Delco engineers realize that trouble-free performance is of vital importance in a refrigerator motor. And they have left no detail unguarded in their product. The Delco brush lifting mechanism, for example, is unusually simple and dependable. Bronze bearings protect the motor shaft from damage. Generously large oil reservoirs make frequent lubrication unnecessary—yet thoughtful provision is made for convenience in re-oiling. How effective are these fortifications against trouble is evidenced in Delco's service records. More than two million Delco motors in electric refrigerators today are giving satisfaction.

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Statistical Progress

PROGRESS in the collection of industry statistics is recorded in this issue. We refer to the figures, just released by the National Electrical Manufacturers' Association, showing total shipments of refrigerating machines by a group of manufacturers holding membership in this organization. The record includes shipments "for all time" of certain sizes and types of equipment. This data represents the first official statistics released by an association representative of the electric refrigeration industry.

The table adds little information to that already published in ELECTRIC REFRIGERATION NEWS on January 14, 1931. In fact, the figures collected by the NEWS are much more comprehensive and detailed. We had hoped that the total sales by NEMA members would be shown by years so that a curve could be drawn and superimposed upon the chart published by the NEWS in January.

Non-Member Information

While the NEMA statistics give no indication of the trend of the industry, later releases, to be made quarterly, should prove extremely valuable. The largest producers of household units are members of the association and ELECTRIC REFRIGERATION NEWS will endeavor to supplement their figures by collecting similar data from the non-member companies so as to arrive at totals for the entire industry.

The real importance of the NEMA statistics lies in the fact that leading manufacturers have finally agreed to an organized plan for collecting such figures regularly. Assuming that the program will be carried through, the industry will have the basis for estimating future growth and a protection against over-expansion a few years later.

As we see the situation, the industry is quite likely to arrive at a period of disastrous over-production some time during the next five years. By that we mean that the manufacturers will probably continue to increase their output until they overshoot the market. In other words, they will reach the "knee of the curve." At this point the rate of increase falls off, although the total sales for a number of years thereafter may possibly exceed those of previous years.

To Compile Stock Figures

In addition to quarterly sales, the NEMA members plan to compile figures on factory and field stocks. This information will be extremely valuable in preventing over-production. Any indication that stocks are increasing while sales are slowing down will be a signal to curtail production and bring it into line with the market. This applies to particular sizes and models as well as totals.

Other advantages of industry statistics have been discussed in previous editorials, two of which are reprinted in full. We believe that the statements made in this column July 20, 1927, and June 6, 1928, will bear repeating at this time. Our own viewpoint as to the need remains the same, except that this need has been intensified by the growth of the industry. The general appreciation of the importance of adjusting production to market requirements has been well demonstrated to business men since November, 1929.

Production Figures

(Reprinted from Editorial in Electric Refrigeration News, June 6, 1928)

INCREASED self-respect will be gained by the electric refrigeration industry when it arrives at the point of being willing to make available to the public monthly figures showing the total production of the principal types of equipment. The industry has already suffered the penalty of exaggerated claims by promoters. Self-interest will be served by the adoption of policies which reflect business stability and sincerity of purpose. Certainly the industry cannot hope to secure the complete confidence of intelligent investors so long as reliable evidence of the industry's condition is withheld.

Two agencies equipped to disseminate statistical information have offered their services to the electric refrigeration industry. The Electrical Equipment Division of the Bureau of Foreign and Domestic Commerce, U. S. Department of Commerce, at Washington, is ready and willing to set up the machinery for collecting monthly production figures from the manufacturers. This service is being rendered to many lines of business with numerous beneficial results. The spirit of helpfulness which pervades the Department of Commerce is well known to business men. The trustworthiness of this department of the government can scarcely be questioned.

If, however, anyone fears that future changes in administration may result in a departure from the well-established policy, another agency is available which is completely within the control of the manufacturers. The National Electrical Manufacturers' Association, which very recently extended a membership invitation to the electric refrigeration manufacturers, maintains an efficient arrangement for the compilation of production data. This service was pointed out as one of the numerous advantages of affiliating with the N. E. M. A.

Particular pains are taken to protect the interest of the individual manufacturer in the plan used by this association. While the members are apprised of the production of different manufacturing units, the names of the companies reporting are not revealed. Totals only are made available to the public. The association, in fact, is the means by which the Department of Commerce secures the production figures for a number of manufacturing groups in the electrical field.

The investing public has become accustomed to having regular and accurate reports reflecting current conditions in terms of factory output. The automobile industry, for example, has used production figures with telling effect in winning the enthusiastic support of investors. The real anxiety which pervaded the business world during the recent stoppage of Ford production, and the wave of relief which swept the country when operations were resumed, amounted to a phenomenon the like of which had never happened before.

Aside from the gain in public confidence, which would result from the elimination from suspicious practices, many practical benefits of accurate production statistics will accrue to the manufacturers themselves. Over-production, one of the worst foes to profit, may be avoided in most cases by observing this barometer of market conditions. Millions of dollars might have been saved by the industry during the past few years if executives had been able to gauge the rate of development more accurately.

It is an interesting fact that industry statistics are the forerunner of simplification. Old industries have gone on for years making a multiplicity of sizes and types of products simply because it was thought necessary to do so in order to meet competition. A study of production figures usually shows that many items have little or no demand. Once this fact is realized it is an easy matter to eliminate the needless varieties.

Right now electric refrigeration manufacturers are confronted with a most troublesome problem due to the increasing number of types and sizes of equipment. As each manufacturer brings out a new unit, the others quickly follow to meet competition. As a result it is almost impossible to maintain production schedules so as to assure adequate stocks to meet each order. Carload shipments are continually being held up to await one or two odd units and these in turn are delayed because the supply of some part or accessory has been depleted.

This confusion in the factory is reflected all along the line to the salesman and the customer. Nothing so discourages a salesman as to find that his arduous efforts have been wasted because the particular unit wanted is "out of stock" and cannot be delivered for "30 days"—ample time for the customer to cool off without mechanical assistance.

The first and simplest step in clearing up the whole chain of evils is an immediate agreement upon some procedure which will enable the industry to take stock of its progress periodically and have some basis for judging its immediate future possibilities. There may have been good reasons for not doing so in the past, but now seems to be a good time to take the step.

Accurate Statistics Needed

(Reprinted from Editorial in Electric Refrigeration News, July 20, 1927)

THE following letter received from R. H. Macy & Company, New York department store, is typical of numerous inquiries regarding the past development, present status and future prospects of the electric refrigeration industry:

"We should like very much to find out through you the number of electric refrigerators manufactured and sold in 1926 and the first six months of 1927. We are interested only in the units used in the home and if possible should like to have the data divided into remote installations and installations complete with the box.

"We would also appreciate your finding out for us the number of non-electric refrigerators manufactured and the number sold for the same length of time. In addition to this information would you be kind enough to give us your opinion as to whether or not electric refrigeration is affecting in any way the sale of refrigerators. Also whether or not you think electric refrigera-

tors can be successfully sold in department stores whose policy is strictly cash."

Requests for statistics are prompted by a variety of interests in the business. A year or two ago investment bankers were endeavoring to obtain figures on which they might base floatations of stock and bond issues. The meager information obtainable at that time was of little value and the tendency was to depend upon promoter's estimates of future possibilities. Most of the estimates were entirely too high.

During the same period advertising agencies and merchandising counselors were seeking data which might be used to justify sales quotas and advertising appropriations. Again the tendency was to take a liberal view of the possibilities.

With the approach of 1927, and as the new factory buildings of the leading companies neared completion, statements were issued freely indicating enormous production programs and predicting sales far in excess of the total sales in all previous years. Exaggeration seems to have become a habit.

Optimistic estimates may serve a purpose in exciting interest in the business possibilities of a new industry. It is claimed by some that a certain amount of exaggeration is necessary nowadays in order to get attention. It is argued that the public discounts all claims anyway. If such be the case, it would appear that many failed to use a proper discount in evaluating the claims of some promoters.

We have now reached the stage where distributing organizations, such as Macy's, with facilities for handling a substantial volume of business, are seeking figures which will enable them to gauge the possibilities of electric refrigeration from a consumer-sales viewpoint. Such organizations want the facts. They want to buy in quantities, but they also want to sell what they buy. They cannot afford to over-estimate the potential demand.

ELECTRIC REFRIGERATION NEWS believes that the time has arrived when the best interests of the industry will be served by the regular publication of accurate figures on current production and sales.

Electric refrigeration represents a fundamental need. Its future is not dependent upon whim or caprice, nor is it the creation of a passing fad or fancy. The public must always have food and that food must be protected from spoilage. The refrigeration machine, located at the point where food is consumed, has provided a real and vital service heretofore lacking. It is not a substitute for other methods; it is the only completely satisfactory method yet discovered, and electricity offers the most convenient and flexible form of power for the operation of such equipment. The truth about electric refrigeration should be sufficient.

Millions of dollars have been poured into the development of electric refrigeration. Some time may be required to make the first turnover of invested capital. The sooner there is an adequate realization of the problems involved in making and marketing electric refrigeration equipment on a profitable basis, the sooner will manufacturers, distributors and dealers be able to solve these problems and secure the profits which are rightfully due them.

Accurate figures on current production and sales, with such figures properly segregated into types and varieties of equipment, as suggested in the Macy inquiry, will be of tremendous value to the industry. Such figures will assist in avoiding reckless over-production with the inevitable loss of confidence, as well as money, on the part of distributors, dealers and investors.

ELECTRIC REFRIGERATION NEWS will gladly provide the facilities which may be necessary to supplement the work of established fact-finding agencies. Expressions of opinion regarding the desirability and the feasibility of this proposal are invited.

Coming Events

Manufacturers' Club, The Homestead, May 15 to 17, Hot Springs, Va.

National Electrical Manufacturers' Association, spring meeting, May 18 to 23, Hot Springs, Va. A. W. Berresford, 420 Lexington Ave., New York City.

National Electrical Credit Association, annual meeting, May 21 to 23, New York, Fred. P. Vose, 1008 Marquette Bldg., Chicago.

National Electrical Wholesalers' Association, spring convention, May 27 to 30, Hot Springs, Va. E. Donald Tolles, 165 Broadway, New York City.

Institute of Radio Engineers, annual meeting, June 3 to 6, Chicago. H. P. Westman, 37 W. 39th St., New York City.

National Electric Light Association, convention, June 8 to 12, Atlantic City, N. J. A. Jackson Marshall, 420 Lexington Ave., New York City.

Association of Iron & Steel Electrical Engineers, annual meeting, June 15 to 19, Cleveland. J. F. Kelly, 1007 Empire Bldg., Pittsburgh.

Canadian Electrical Association, annual meeting, June 16 to 18, Banff, Canada. H. W. Lyster, Power Bldg., Montreal, Que.

American Society of Agricultural Engineers, annual meeting, June 22 to 25, Ames, Ia. Raymond Olney, St. Joseph, Mo.

American Institute of Electrical Engineers, summer convention, June 22 to 26, Asheville, N. C. F. L. Hutchinson, 33 W. 39th St., New York City.

American Society for Testing Materials, annual meeting, June 22 to 26, The Stevens Hotel, Chicago. C. L. Warwick, Engineers' Club Bldg., 1315 Spruce St., Philadelphia.

PATENT COMMITTEE IS NAMED BY N.E.M.A.

(Concluded from Page 1, Column 1)

members and the committee decided to attempt the preparation of a single warranty and C. S. Smith was delegated to prepare the original draft. The division referred the matter back to the committee for further consideration and report at later meeting.

This committee reported that it had contacted with the committee on telegraph code for the electrical industry, and had furnished the committee with copies of individual code books of some of the members.

In conformance with a former action of the division, Col. Smith announced that the commercial practices committee had made the following selections.

Patents subcommittee: F. W. Swezey, chairman, Westinghouse Electric & Mfg. Co.; L. D. Burch, patent attorney of Kelvinator Corp.; J. King Harness, representing Copeland Products; Carlton Hill, representing Norge Corp.; Cedric G. Smith, General Electric, and E. T. Williams, Servel.

Traffic subcommittee: J. E. Chamberlain, Kelvinator Corp.; O. G. Lonskey, Copeland Products; Sam Marks, Westinghouse; Albert McGinness, Servel, and Glen C. Wasson, General Electric.

All these appointments were approved by the division. Representatives of Frigidaire on these committees will be announced at a later date.

Dealer Relationships Discussed

The committee reported discussion of manufacturer distributor-dealer relations undertaken with the object of determining whether and how these could be improved. As a result it recommended that questionnaires be prepared covering certain essential features of the problem and that the resultant data be analyzed and presented to the division for its consideration.

To assure full attendance at committee meetings it was believed that such meetings should be held on the same day with meetings of the division. Accordingly it was voted to hold all committee meetings coincidentally with the meetings of the division, the committees to meet in the forenoon and the general meeting in the afternoon.

Mr. Burritt called the attention of the division to the joint committee, consisting of Messrs. Burritt, Harlan and Zimmerman, appointed by the previous administration to work with a committee from the National Association of Ice Industries before their reorganization.

Mr. Burritt felt that the work of the committee was definitely of value to the division. It is the intention of the Ice Industries to appoint a similar committee under their new constitutional basis. Mr. Burritt suggested that the committee be reviewed to determine whether the division desired to continue and whether it should include the same personnel or whether that personnel should be changed or increased.

Edwards To Talk On Code

It was reported that H. D. Edwards, former president of the A. S. R. E., will deliver a talk on the A. S. A. safety code for mechanical refrigeration at the meeting of the National Fire Protection Association in Toronto during the week of May 11.

It is understood that the brochure entitled "The Hazards and Safeguards of Mechanical Refrigeration" which will be presented for adoption at the N. F. P. A. meeting will contain a recommendation that the A. S. A. code be used as a basis for state or municipal requirements.

This recommendation will replace the suggested "ordinance governing the installation of mechanical refrigerating systems" which was formerly included in the brochure. The brochure was a part of the 1930 report of the N. F. P. A. committee on gases and was received by N. F. P. A. only as a progress report in anticipation of the issuance of a refrigeration code by the A. S. A.

C. D. Taylor, chairman of the industrial research committee, reported that a meeting had been held on April 17, at which had been present representatives of outside interests. The discussion concerned the possibilities for cooperation between the various interests, the food producers, the manufacturers of display cases and the manufacturers of refrigerator units in the development of quick frozen foods.

The committee suggested the possibility of co-operating with the Frozen Foods Association of America in conducting research activities. The division approved the committee's report and Mr. Taylor was instructed to proceed with the preparation of a suggested plan for co-operation.

A brief report was given to the division, outlining the program of the Electric Refrigeration Bureau, a recently formed activity for the stimulation of the sale of electric refrigeration. It was felt that this activity is of vital interest to the division, and arrangements were made to have a more detailed report presented at the next meeting.

The division accepted the invitation of the Kelvinator Corp., to lunch and hold meetings at their plant on May 27. Committee meetings will be held in the morning, and the division will meet at 1:30 in the afternoon.

EVAPORATOR DESIGN TRACED BY D. D. WILE

(Concluded from Page 5 Column 5)

rents and radiant heat that would have resulted from the usual type of electric heater.

A very sensitive thermostat was constructed and arranged to control the heater automatically, so as to maintain constant temperature. The bulb of this thermostat was located in the air flow over the baffle, and was set to operate at 54° F. An automatic expansion valve controlled the low side pressure so as to produce 12° evaporation temperature. The refrigerant was methyl chloride.

Eight thermocouples measured the surface temperature of the evaporator. A variable speed compressor was used to supply the proper amount of refrigeration. The refrigeration output for any particular cooling unit was a fixed quantity, determined by the constant air temperature and evaporation temperature.

The compressor speed was therefore adjusted to supply the required amount of refrigeration without producing any frost or sweating on the suction line. This condition was determined by thermocouples located on the suction pipe. A temperature control was also attached to the suction line, and arranged to control automatically the compressor speed.

The automatic controls were particularly useful in allowing the apparatus to run overnight, and be ready for a test in the morning. A mercury column

	2 Tray	3 Tray
Inlet air temperature °F.	53.8	54.2
Outlet air temperature °F.		45.3
Average air temperature °F.	48.7	49.7
Evaporation temperature °F.	11.9	12.1
Surface temperature °F.	16.0	15.5
I.M.E. per 24 hrs. Lbs.	47.0	58.0
B. t. u. per hour	282	348
K ₁ (Surface to avg. air)	2.1	2.0
K ₂ (Evaporation to avg. air)	1.9	1.8

Note: K—B.t.u./Sq.Ft.°F./Hr.

Fig. 10, Evaporator Capacity Test

indicated the low-side pressure and the usual measuring drums indicated the rate of refrigeration.

Fig. 10 shows the results for the two and three-tray aluminum evaporators as finally designed. Air entering the baffle was controlled at 54° and evaporation temperature at 12°.

The temperature of air leaving the cooling unit was slightly different for the various types of units tested, depending on the design and baffle.

The average air temperature was used in calculating the coefficients of heat transfer. I.M.E. 24 hrs. and B. t. u. hr. were calculated from the rate of flow of refrigerant as determined by the measuring drums.

It is this rate of heat transfer, of approximately 2 B. t. u. per hr. per °F. sq. ft. of surface, that determines the amount of surface required to cool the box. If you reduce the surface, you must also lower the suction pressure and thus decrease the efficiency of the compressor.

We recommend the two-tray unit for cabinets of 4 to 8 cu. ft. food space, and the three-tray unit for 6 to 8 cu. ft. boxes.

The two-tray unit has 4.1 sq. ft. of surface, and 11½ ft. of ¾ in. tubing, while the three-tray unit has 5 sq. ft. of surface, and 15 ft. of ¾ in. tubing.

We also investigated the time required to freeze ice cubes with these units. Before giving the test results, I want to explain the method used to measure ice freezing time.

We put thermocouples in the ice trays and obtained the freezing time from an automatic recorder. The trays are not disturbed during the freezing process. We wet the bottom of the trays, increasing the freezing time.

Ice Cube Freezing Time

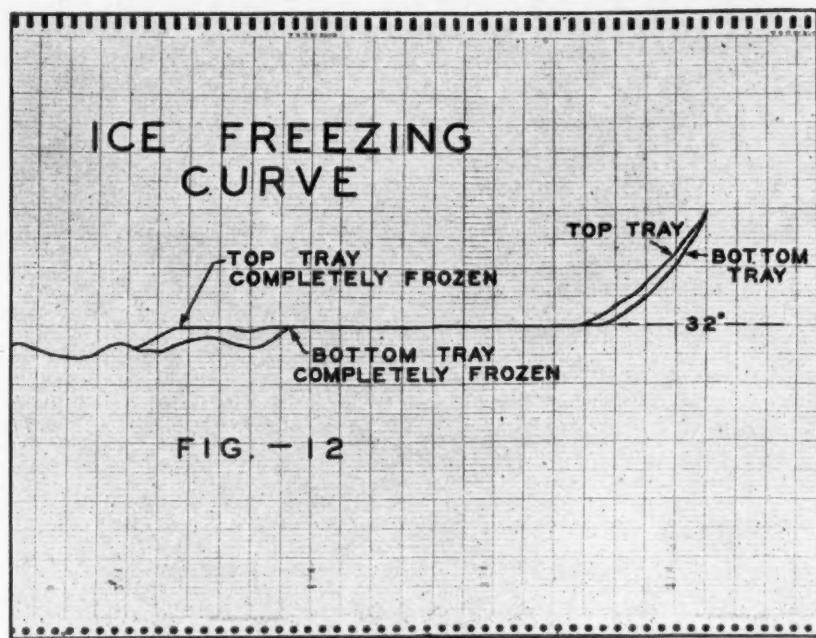


Fig. 12, Each Vertical Line Represents the Passage of 10 Minutes

and also the bottom of the tray compartment, so as to obtain thorough contact.

By this method we have obtained consistent results, and believe that our method agrees with practical conditions, because after a refrigerator has been in operation for a few days, it collects enough moisture and frost in the tray compartments to securely freeze the tray into place.

Fig. 11 shows some of the laboratory apparatus. The ice freezing recorder is at the extreme left. Thermocouple wires can be seen entering the trays. Note the thermocouples near the top and bottom of the box and the potentiometer for reading the various temperatures.

Often two boxes were operated at the same time, this necessitated taking readings on 24 thermocouples. Note the multi-point switch, and the telephone cable used to extend the thermocouple wires to the hot room some distance away.

Fig. 12 shows a representative ice freezing curve. The trays are put into the cooling unit with the water at room temperature, 80° F. The temperature cools quickly to 32° where it remains until the tray is completely frozen, then drops sharply down to the temperature of the cooling unit.

Each vertical line on the chart represents 10 minutes time. The top tray froze in 3 hours and the bottom tray in 2 hours and 20 minutes. Each tray contained 2 lbs. of water.

Fig. 13 shows the results of several ice freezing runs, and also the effect

	BOTTOM TRAY	TOP TRAY
HOURS MINUTES	HOURS MINUTES	HOURS MINUTES
2:30	4:20	
2:20	4:10	
2:20	3:00	
2:20	3:00	

Fig. 13, Effect of Tray Width on Freezing Time.

of the width of tray shelf on the freezing time. The original design had a solid shelf, but we wanted to leave out part of the shelf in order to make the unit more easily cleaned, and also to save aluminum.

This shelf had rails extending from front to back to prevent the trays from sticking too tightly, so it was evident that part of the shelf between the rails could be removed without seriously in-

temperature, with the two-tray unit and a 7 cu. ft. total contents cabinet. We do not measure freezing time in 100° room temperature, because the results would depend too much on compressor capacity rather than the merit of the cooling unit.

I mentioned above that the location of the thermostat was very important with this type of cooling unit. Efficient operation depends on the proper location of the bulb of the thermostat.

The bulb should be in close contact with the suction line leaving the evaporator, and for this purpose we designed a special drop forged elbow (Fig. 14). This elbow has a socket suitable for thermostats, in which the bulb is an integral part of the control. It locates the thermostat in a convenient position, especially with respect to the quick freezing adjustment.

For thermostats with remote bulbs, we recommend clamping the bulb to the suction line as close as possible to the elbow leaving the evaporator. Fig. 15 shows a bulb clamped in this manner. This arrangement on the suction line requires a temperature setting at the

cut-out point to not lower than 10°. These are average values and will vary somewhat with the type of installation.

Fig. 15 shows the aluminum evaporator fitted with a thermostatic type expansion valve as used on multiple systems. In connection with multiple installations I want to recall Fig. 4 showing the very small amount of refrigerant contained in this type of evaporator.



Fig. 15, Using Thermostatic Expansion Valve

These new evaporators contain approximately 1/10 lb. of refrigerant. More important is the amount of liquid contained in the liquid lines and shut-off valves. Assuming 15 ft. of ¼ in. tubing for the liquid line and one shut-off valve, each unit will require about 1/3 lb. of methyl chloride or ½ lb. of sulphur dioxide.

The problem of corrosion appeared to be serious at first, because aluminum forms a white spongy deposit when exposed to moisture for long periods of time. This is sometimes called "blooming" because the deposit seems to grow out of the surface. Blooming has been prevented by boiling the units in paraffin. We have also investigated some other methods of treating the aluminum, and found several that were satisfactory.

This development was particularly interesting from the laboratory standpoint because the design was unconventional. Several thousand of these units are now in operation.

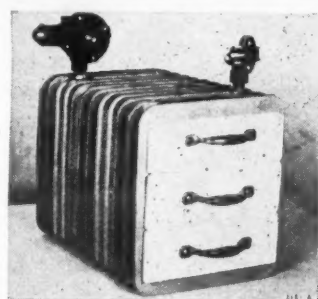


Fig. 14, Drop-Forged Elbow for Thermostat

cut-in point of about 40°, while with the special elbow fitting, the thermostat should cut in at about 35°.

The cut-out point should be about 20° for either type of control, and the quick freezing adjustment should reduce the

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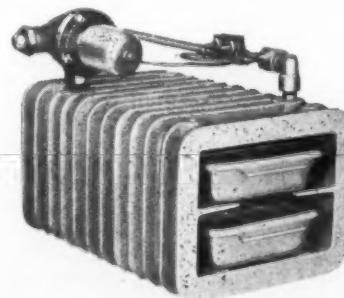
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3 Tray for those of 7 to 9 cubic feet

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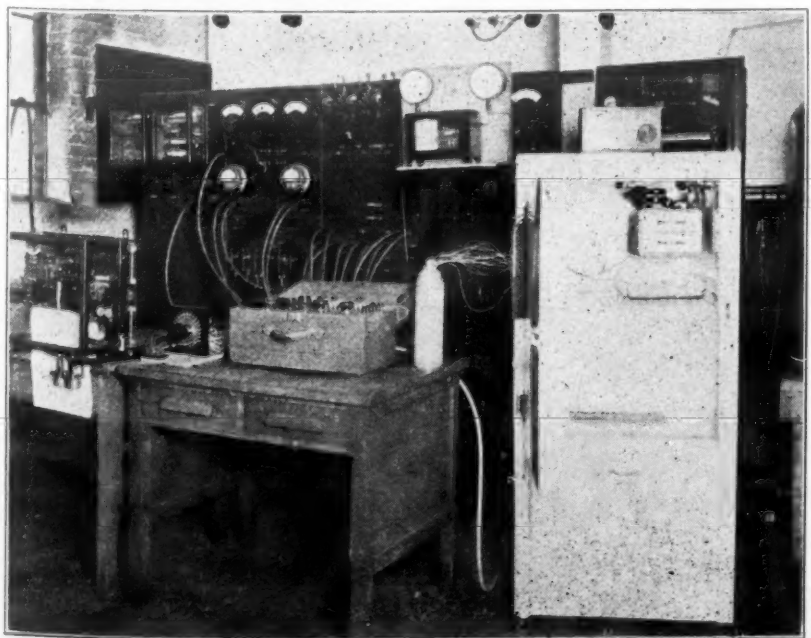


Fig. 11, Laboratory Apparatus for Testing Evaporator Performance

Carrier Traces History of Air Conditioning

Conditioned Air First Sought In 1902 By Brooklyn Printer

By Willis H. Carrier,

IT IS interesting to look back only a little more than a quarter of a century and be reminded that at that time air conditioning was only the crudest form of ventilation. Humidification when attempted was usually accomplished by the sprinkling of floors, or the ejection of steam directly into rooms in which it was desired to raise the moisture content.

The instruments for measuring the moisture content of the air were crude, and the reference data upon which determinations were based were comparatively inaccurate and covered only a limited range.

Such control of humidity as was attempted, was accomplished by hand by the opening or closing of valves; the regulation of temperature was just being developed by automatic instruments. Even if there had been automatic humidity regulation instruments, the means for proper humidification had not yet been developed.

In the matter of dehumidification, or cooling of the air, the art was in an equally unsatisfactory and undeveloped state. There had been a number of applications in a limited way, in which air was cooled by passing over ammonia expansion coils or cold brine coils, and by which the air was cooled sufficiently to deposit a portion of its moisture on the pipes as frost.

Such systems were cumbersome, dirty, and offered increasing resistance to the

air flow, as frost and dirt collected on the pipes. Again, automatic and fixed control was out of the question.

Air washing had entered into its early stages of development. I believe the first practical unit was the Acme Air Washer invented and manufactured by Thomas of Chicago. This marked a real advance in ventilating systems.

It was built primarily, however, as an air washer and the humidification which it gave was merely incidental. No attempts were made to effect control by the modification of water temperature, nor to give complete saturation.

It is interesting to look back upon the incidents of anyone's career, and see how accidental occurrences may become vital factors effecting one's future activities.

In 1902, the late Walter S. Timmis, known to most everyone in our field of engineering, came upon a problem in a Brooklyn lithographing plant where the process of lithographing during the extreme Summer conditions would obvi-

ously be improved in both quality and efficiency by reducing, or at least controlling, the moisture content of the air.

He took this problem to J. I. Lyle, then manager of the New York office of the Buffalo Forge Co. Mr. Lyle submitted the problem to the home office where, a year before upon leaving college, I had taken a job in the engineering department and was assigned primarily to research and development.

Mr. Timmis suggested that we investigate the moisture absorbing properties of a solution of calcium chloride brine. I was assisted by E. T. Murphy and R. W. Pryor, Jr., both of whom are now prominent heating and ventilating engineers. Our work established very definitely the moisture absorbing properties of this solution; but only served to point out many objections to its commercial use, among which were the liberation of the latent heat of the water absorbed, the entrainment of brine with resulting undesirable odors and corrosive action.

should we not then spray the cold water into the air stream, thus increasing the surface of contact and reducing the resistance to air flow.

Developments followed rapidly. Satisfactory spray nozzles were developed. The next step was the development of eliminator plates, which prevented the entrainment of unevaporated particles of moisture with the air stream after leaving the spray chamber.

These early experiments, prompted by a problem based upon a comparatively small printing establishment, started the trend of investigation through which many of the fundamental laws of evaporation, of humidity control and of heat transfer were established, and are in use today as the basis of air conditioning practice.

In about 1905, the company with which I was then associated, undertook the commercial manufacture of air washers, many design features of which were developed during these experiments which I have just described.

Devised Dew-Point Control

Incidental to this development, the dew-point control was devised. This consisted of a thermostat placed at the connection between the fan and the air washer. This thermostat was designed to control the temperature of saturation of the air; that is, its dew-point, by controlling the temperature of the water delivered from the spray nozzles, a practice generally in use today.

This led to a practical method for controlling the relative humidity within a room to which the conditioned air was delivered. The procedure was simple. If the dew-point is fixed at the spray chamber and the temperature of the air controlled within the room, any desired relative humidity may be established.

In 1905, the first air washer, or central station humidifier, was installed in a textile mill near Charlotte, N. C. Early experience showed the defects, and it was only a few years until central station humidifiers and air conditioning equipment became common in textile mills throughout the South and in New England.

We can pause here to say that air conditioning and controlled humidification have counteracted unfavorable climatic conditions in the South, and have been to some extent responsible for the vast textile manufacturing development in that region during the past two decades.

All of these early experiences in the laboratory and in practical application brought to our attention fundamental relationships, and natural laws which were investigated and finally rationalized on a mathematical basis.

For instance, it was noticed that the saturation temperature of air when passed through a chamber in which the

spray water was simply recirculated was exactly the same as the wet bulb temperature of the entering air. This same fact was subsequently observed in tunnels in which wet material was being dried.

Under these conditions it was noted that the wet bulb temperature remained essentially constant throughout the length of the tunnel, while the dry bulb temperature of the air was being reduced due to the absorption of sensible heat by evaporation and coincidentally, the dew-point was increasing.

An analysis of this showed that the total heat of the air remained constant throughout such a saturation process, and that the wet bulb temperature could be taken under any condition as a measure of the total heat of the air.

These facts were rationalized and formulated, establishing the basis for the Psychrometric Chart, now in general use. The formulae with other derivations, and the chart were presented by me in a paper before the American Society of Mechanical Engineers in 1911.

Stewart W. Cramer of Charlotte, N. C., independently discovered this same law relating to the wet bulb, when he found that the air leaving his spray head humidifiers was the same temperature as the wet bulb of the room. He utilized this principle in 1906, in the wet and dry bulb hygrometer upon which he obtained a basic patent.

On the basis of these early fundamental discoveries and developments, the science of air conditioning has grown. With a little educational and sales effort, it did not take manufacturers in many lines long to discover that this new science could be applied to great advantage in their industries.

Many Industries Using Conditioned Air

The list of distinct industries where in air conditioning has now been applied numbers well over a hundred, and the number of installations may be counted in thousands.

The printer and lithographer at whose door we may almost lay the origin of air conditioning has been slow to seize upon the many advantages which are offered. This, however, is largely due to the fact that the industry has been scattered and the majority of shops have been small.

However, this is changing, and an increasing number of progressive printers and lithographers are adopting weather control to avoid the many delays and defects which have effected the quality and efficiency of their production.

No modern textile mill is without some form of humidification or air conditioning. Cigar and cigarette factories are also almost universally equipped, otherwise they would find it impossible to accomplish the high rate of machine

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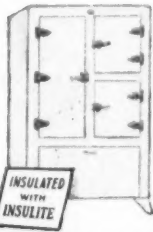


Willis H. Carrier
Chairman of the Board, Carrier Corp.

An investigation was also conducted in which brine and cold water were circulated through pipe coils over which the air was passed. During these experiments, it was observed that as dehumidification was taking place, the air was in contact with water on the pipe surfaces; in other words, we had the apparent paradox of reducing the moisture in air by bringing it into contact with moisture.

Of course, the explanation was simple. The temperature of this water was below the dew-point or condensation temperature of the entering air. Why

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DRY DRIER DRIEST

W. H. CARRIER TRACES AIR CONDITIONING ART

(Concluded from Opposite Page)

production through which more than a hundred billion cigarettes and some seven billion cigars are produced annually in the United States.

Rayon, a new but powerful industry, is dependent in almost every one of its processes upon accurate automatic control of temperature and humidity.

The modern confectionery plant now utilizes air conditioning to maintain cool, non-humid conditions within the manufacturing, packing, and storage room. Comparatively uniform schedules of production are followed throughout the year. A high grade and efficient staff of employees is retained. Extra employment for rush seasons is avoided. Under controlled air conditions, perfect confections may be made and stored in August for the holiday rush.

Our progress during the past 16 years has consisted primarily of development and perfection of equipment to accomplish the results indicated by the early investigations. The early installations of air conditioning equipment were primarily pieces of apparatus then available, and frequently developed for another purpose. The fan and blower equipment of today is decidedly improved.

Dependable Control Instruments

Recent years have seen the development of light-weight extended surface, rustless heaters, which respond quickly to automatic control, and which are easy to erect make an integral part of a metal duct system. Control instruments have been improved and are now very dependable and almost fool-proof.

Much has been learned relative to the distribution of air and the construction of metal duct systems. Whatever air condition may be established within the apparatus, its purpose is not served unless air is properly distributed within the space to be conditioned.

This perhaps, is one of the most important factors in present day air conditioning practice, and it is here that the inexperienced or rule-of-thumb builder is most apt to fail in the construction of a system.

Refrigeration equipment which must be used in conjunction with air conditioning systems, wherever cooling and dehumidification are to be accomplished, has been greatly improved. It was this requirement for a safe compact flexible refrigeration unit adaptable to an air conditioning system, which brought about the development of centrifugal refrigeration now widely in use in conjunction with the modern air conditioning plants in theaters, public, and industrial buildings, here and abroad.

Holds Great Hope for Future

When we venture to look forward, we are quite as likely to under-estimate the possibilities of the future, as we are to enlarge and place too much importance upon that which is past. We can only say now, that air conditioning has become the useful and often indispensable servant of manufacturers in hundreds of industries.

In the past few years, these developments have been seized upon to create conditions of healthful comfort in theaters, offices, hotels, stores and with the present growing interest of the public, it seems evident that merely the surface has been scratched.

We now look forward to the complete air conditioning system in the home, including cooling and dehumidification in the Summer, as well as the furnishing of clean, properly humidified and tempered air during the Winter.

Now what does tomorrow hold for air conditioning? We have reached the end of the period when the experience of first users in the fields where it is going to be most widely used, has demonstrated both its practicability and its economic values. We are on the three-

When exceptionally long refrigerators or display counters are installed with refrigeration equipment, the cooling coilage should be evenly distributed along the length of the box or case. When a large meat cooler, over 30 ft. in length, was installed in San Francisco recently, the ice bunkers were torn out in order to allow three pairs of four-foot cooling coils to be bracketed above newly constructed air baffles in the box.

It was necessary to do this in order to insure an evenly distributed air circulation, and to make the coils accessible to service at all times. When cooling coils are bracketed in the middle, or at either end of a long refrigerator or display counter, dead air spaces are apt to result, causing a variation of interior temperatures.

Another good idea to be followed in making installations in meat coolers of exceptional size is to use two separate compressors, each connected to its own cooling coils. A large meat cooler usually has a considerable investment in meat stored in it at all times, and by using a double system the owner is insured against meat spoilage, one compressor carrying the load in case of faulty operation of the other.

Another advantage of such a double installation in an exceptionally large-sized meat cooler is that if the owner should so desire, he may build a partition in the center of the box and operate half of it at a sharper temperature, or, perhaps, use it for longer storage purposes.

Ice-making coils operate at better efficiency if isolated in heavily insulated cabinets rather than being made to serve a dual purpose of furnishing refrigeration as well as producing ice.

A commercial installation can be designed both for ice-making and general refrigeration, by using the expansion valve on a continuous length of cooling

hold of the period when air conditioning will become a standard and accepted service in these fields.

Today, over 300 theaters are equipped. But there are at least 3,000 theaters which logically need air conditioning. At a conservative tonnage estimate of only 75 tons per theater, these 3,000 theaters constitute a potential demand for 225,000 tons of refrigeration.

There are less than 20 department stores equipped with complete air conditioning today, but there are at least 500 stores whose size and clientele warrant such installations. A potential demand at a modest estimate of 400 tons per installation exceeds 120,000 tons.

Office buildings offer another tremendous field. Today there are less than a dozen completely equipped, that is, providing air conditioning for all rentable area. Tomorrow, every new office building will install air conditioning as a matter of course. At least 2 ton of refrigeration per 100 sq. ft. of conditioned floor area is required in such buildings.

Hotels, banks, retail stores, restaurants, barber shops, beauty parlors, the list in the building field presents the same story—pioneer installations made and demonstrating the value of the service, and the new era ready to take shape.

Nor should the further expansion of the industrial fields in which air conditioning made its first steps be overlooked. A very small percentage of the total available industrial market for air conditioning has been developed to date.

Will Provide Employment

Another interesting phase of the subject is the part air conditioning will play in providing employment. Always after a depression such as the one we are now suffering, new industries, in their rapid expansion, take up the slack of employment developed during the slump, and in their continued expansion help create new levels of general prosperity. Air conditioning is one of these industries for the era of prosperity we are about to enter.

It must be realized that this development cannot take place at once, but if the acceleration in the application of this art continues for the next 20 years as in the past 20 years, and there is every reason why it should, there will be in this country an annual business of over \$250,000,000 in producing artificial climate.

Such values may be interpreted in terms of demand for power, for materials and machines, for the labor of many men in many trades. This will include air conditioning for industry and for human comfort, not only in the home, but for all enclosures where men assemble—auditoriums and theaters, railway trains, offices, and stores.

Air conditioning, then, like any other new idea, must inevitably pass through regular and deliberate stages of growth. Today, it has advanced in technique, in experience, in resources and most important of all, in the appreciation of its values by prospective users to the point when it's novelty, its reputation as a luxury will be replaced by a matter-of-course acceptance. Air conditioning is going to become commonplace, and in so doing, grow with the stored-up energy of its development years.

SERVICE HINTS

By FRANK W. GRAY

When the coil being first run through the ice-making cabinet and then carried into the refrigerator, with the expansion valve adjusted to produce a 40° F. temperature in the refrigerator.

When designing refrigeration equipment for the cooling of bottled beverages, installation men should remember that water is a much better heat conductor than air, and that by submerging the bottles in a sweet water bath, cooled to 40° F., the beverages will be chilled in about half the time required in a cold compartment where air is the medium of heat transfer.

Galvanized wire baskets may conveniently be used to contain the bottled goods in a sweet water bath. The wire baskets may be arranged to slide into slanting racks, making the bottles easier to handle, keeping them from too close contact with the cooling coils around the sides of the tank. The use of wire baskets also protects the lining of the tank from wear and tear which may result in leaks.

Rust is the enemy of good installation work. Service men should continually bear in mind that all coils, fittings, hangers, brackets for tubing, etc., which are exposed to frost action or to moist air, should be tinned, galvanized, or otherwise protected from rust action.

Brass fittings should be carefully packed in the service kit, and should be inspected for defects before being installed in refrigeration systems. Careless handling often results in small dents in the polished brass flared surfaces. Such defects are apt to result in troublesome leaks. Once in a while inspection will disclose a fitting which is faulty in manufacture, the flared sur-

face being either concave or convex, or slightly lop-sided from poor machine work. Such fittings should be discarded.

Sometimes it is found that a refrigeration system operating on a direct expansion coil with thermostat bracketed thereto, operates in short, jerky cycles. Such spasmodic operation is hard on the motor and belts, to say nothing of the electric bill.

This condition is usually due to the fact that there is an excess of cooling coil in the refrigerator, and that the temperature pulls down very quickly, causing the thermostat to snap off and on at frequent intervals. Such a defect in operation can often be corrected by moving the thermostat a little further way from its contact with the cooling coil.

Or if by doing this the box becomes too cold, then the thermostat should be bracketed further along the coil toward the expansion valve, thus eliminating part of the coil surface and operating the machine on longer cycles.

TRAVIS DIRECTS SERVICE FOR BISHOP & BABCOCK

Cleveland.—R. C. Travis, for the past five years associated with the Frigidaire Corp. of Dayton, Ohio, has been placed in charge of the service department of the Bishop & Babcock Sales Co.

During the last two years of his connection with Frigidaire, Travis was a special sales representative, contacting all soda fountain manufacturers.

The Bishop & Babcock Sales Co. maintains direct factory branches with sales and service departments in principal cities of the United States.

Mr. Travis will extend and standardize the operations of these separate service organizations and co-ordinate their work with that of the sales department.

HAMANN RETIRES AS CHAIRMAN OF ROESSLER & HASSLACHER

NEW YORK CITY.—William A. Hamann, chairman and director of the Roessler & Hasslacher Chemical Co., has recently retired after a career of almost 50 years in the chemical manufacturing industry.



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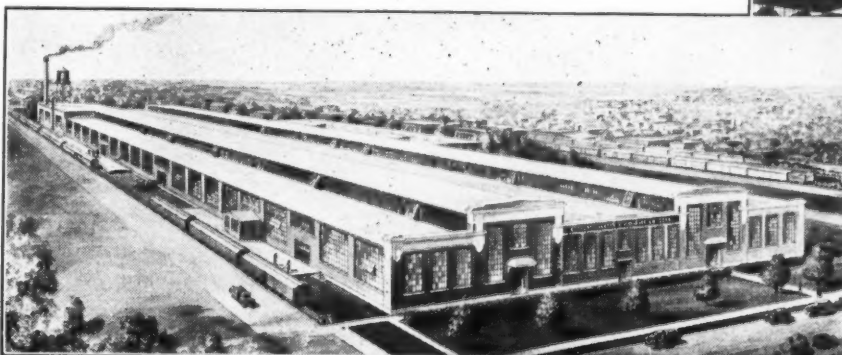
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On the popular 1931 Copeland models, is an enamel finish of the very finest quality—one that will last a lifetime, because it's applied over Bonderized metal.

Enamel, on Bonderized metal, is more than a decorative coating. It is an integral surface element, which cannot peel, blister, or otherwise separate. It comprises a lasting positive protection against unsightly, destructive rust.

To users and prospective buyers, the beauty and permanence of the Copeland's enamel finish takes rank with the Coldial control, lighted interior, and convenient drinking water tap as evidence of exceptional value.



The Copeland Cold-Chef, a complete Cold Storage Plant for the Home.

When ready for surface applications, Copeland cabinets are carried on overhead conveyors to a huge Bonderizing tank and are dipped for ten minutes in Bonderite solution. Upon withdrawal they are given a quick water rinse.

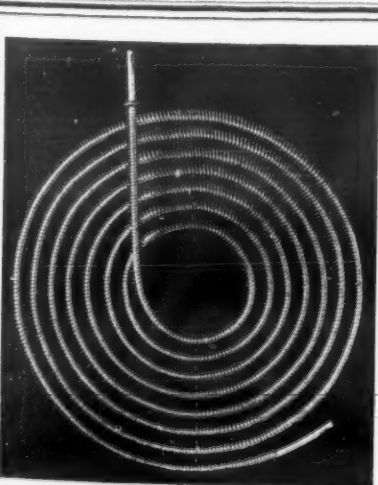
The result is a chemically clean metal surface, possessing minute mechanical

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IS MADE IN FIVE STANDARD
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ELY STRESSES NEED FOR SIMPLIFICATION

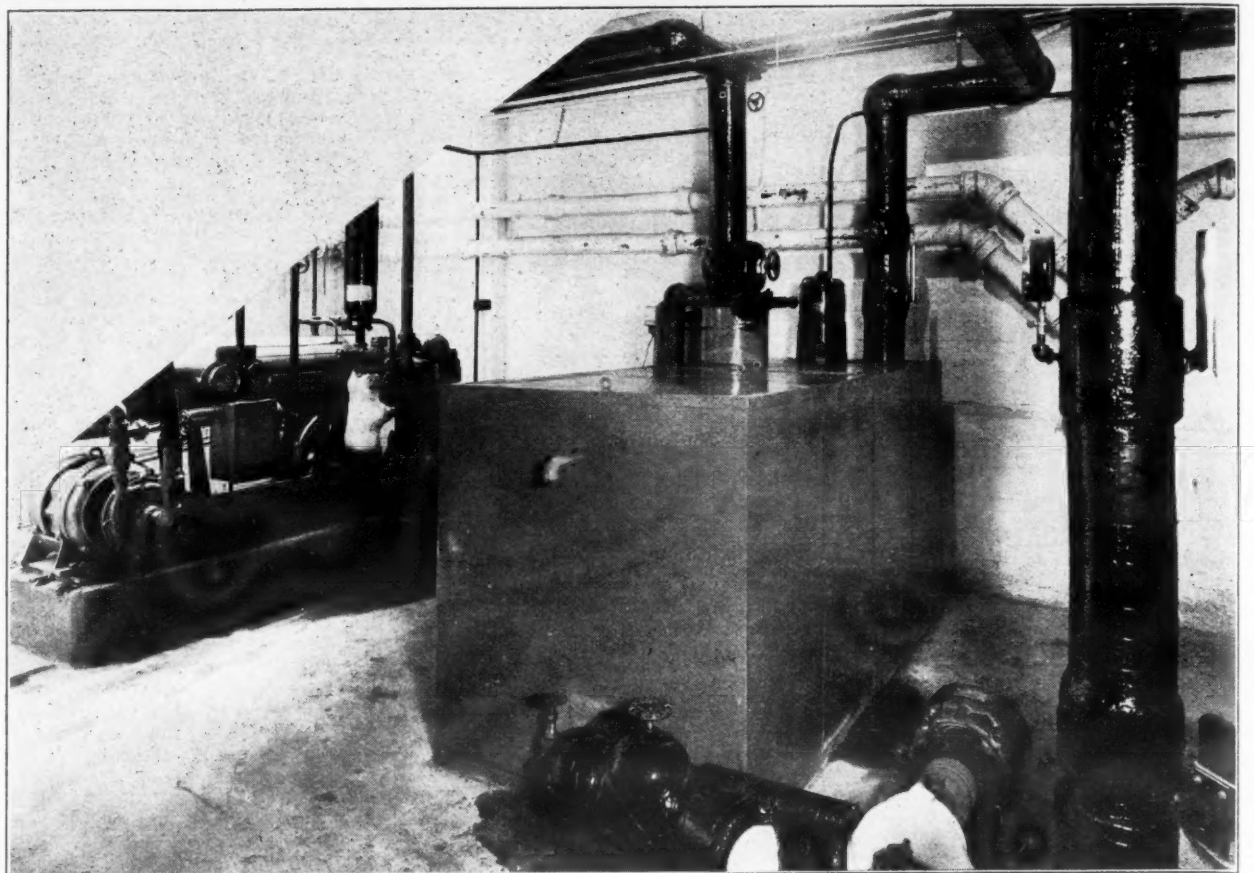
WASHINGTON, D. C.—Business men sometimes map their activities according to rules of probability and chance, and base their production and sales policies upon principles of permutations and combinations, stated Edwin W. Ely, chief of the division of simplified practice of the National Bureau of Standards, in an address before the triple convention of the Southern Supply and Machinery Distributors' Association, the National Supply and Machinery Distributors' Association, and the American Supply and Machinery Manufacturers' Association, on April 27, at the Wardman Park Hotel here.

Continuing, Mr. Ely said, "Simplified practice means reducing variety in sizes, dimensions, and types of commodities so as to eliminate avoidable waste in manufacturing, selling and purchasing. It is concentration on varieties in known demand and, when properly applied, becomes a declaration of freedom from expensive permutations and combinations.

"For example, in 1925, the manufacturers of artificial abrasive grinding wheels found that they were manufacturing 715,200 varieties of wheels. Through organized effort, surveys of production and demand were made which revealed that 460,800 of these varieties were superfluous. Consequently a simplified practice program was proposed by the industry, recommending that the latter varieties be eliminated, and that production for stock be concentrated on the remaining 215,400 varieties."

He also spoke of the cooperative services of the division of simplified practice, and suggested that the members of the three associations utilize this service when opportunities for simplification were presented.

Providing Refrigeration for Los Angeles Market



This York full-automatic, self-contained equipment in the basement of Hattem's new super market in Los Angeles, circulates brine to its display cases, built-in coolers, and meat cases.

NEW SUPER MARKET INSTALLATION MADE

LOS ANGELES—(Special Wire to ELECTRIC REFRIGERATION NEWS)—Over 200 ft. of refrigerated display cases of the straight-line type, and some 2,000 ft. of refrigeration piping, supplemented by a number of built-in storage coolers, comprise the installation in Hattem's new \$250,000 super drive-in food market which has just been opened in a suburban part of Los Angeles.

The new drive-in market is one of the largest in the city, and serves as a shopping center for the community housing, in its block-long structure of a series of little shops and individual food stores.

Refrigeration equipment costing \$6,000 was installed by the York Ice Machine Corp. The food display cases, standard tile finish models as well as storage boxes and other fixtures, were supplied by the City Refrigeration Co. of Los Angeles.

The necessary refrigeration for perishables includes provision for the cooling of fresh meat, fish and poultry at a temperature of 40° F., delicatessen and dairy products at 45° F., and built-in coolers for reserve stock at 38° F.

Food sections in this 150x150 ft. market are arranged so as to give maximum service. At the rear is the model butcher shop, occupying 1,300 sq. ft., and equipped with 60 ft. of angled meat cases, refrigerated by 300 ft. of pipe; in addition to a large meat box 20x12x10 ft. containing 400 ft. of 1 1/4 in. galvanized iron pipe. This same size of pipe is used throughout the cases.

A retail meat box 13x5x10 ft. contains 150 ft. of pipe; a freezer box 9x8x10 ft. contains 220 ft. of coil; and a delicatessen box measures 15x9x10 ft. and is equipped with 200 ft. of pipe.

The built-in storage coolers are equipped with display windows, and the freezer box is capable of maintaining a temperature of 25° F.

The delicatessen division adjoining contains 64 ft. of display cases, arranged in a square, and 360 ft. of refrigerated pipe. In the grocery section is a 10 ft. dairy case, refrigerated by 75 ft. of pipe.

Concealed beneath the vegetable and fruit stands is a watermelon storage case 8x6x4 ft. refrigerated by 100 ft. of pipe.

The cases are cooled by a full automatic self-contained York refrigerating machine installed in the basement of the structure. By means of a brine pump, directly connected to the motor, brine is distributed to the various refrigerated cases and boxes.

N.E.M.A., A.I.E.E. WILL SET NEW WELDING STANDARDS

NEW YORK CITY—A sectional committee for formulation of standards for electric welding apparatus has been formed under American Standards Association procedure, with National Electrical Manufacturers Association and American Institute of Electrical Engineers as joint sponsors.

The scope of work includes definitions of terms, classification, rating, heating, efficiency, testing methods, dielectric test, standard values of current and voltage, and name-plate data.

Five Practices Will Increase Conveyor Life

By W. E. Philips
Engineer, Link-Belt Co.

A QUESTION that is often raised is "How can we increase conveyor life?" As an answer to this popular question, I would say that five simple things materially increase the life of the average belt conveyor installation.

These remarks are based on the assumption that when the conveyor was originally installed, the idlers were lined up square with the belt; that an experienced engineer's advice was taken when determining on the belt design for the material to be handled; and that the belt was lined up correctly with the idlers.

Even though the original installation was correctly engineered, it requires some attention to get the best results afterward, just as an automobile does if the utmost satisfaction is desired.

The five things to which I refer are:

1. LUBRICATION. Sufficient greasing with the proper kind of grease, although infrequently needed.

2. CLEANLINESS. Keep the space under the belt clean. Clean the decking when material overflows and threatens to clog the idlers. Clogging increases the friction load, resulting in greater power consumption and wear on the driving mechanism as well as the idlers and belt.

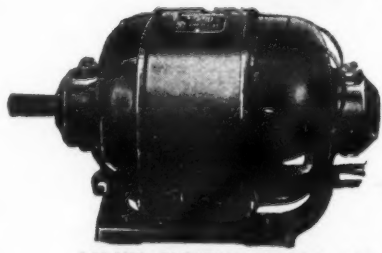
3. LOADING. Do not overload. Use an idler sufficiently heavy, and a belt designed for the service expected. Have material reach the belt in the same direction the belt is moving and with as little impact as possible. Use feeders when necessary as they create a steady flow of material without shock to the conveyor.

4. WEAR. There are many reasons for uneven or premature wear on belts and idlers. Belts scraping against frame-work, skirtboards, or wedged material are the chief causes. Dragging idlers, caused by insufficient lubrication, or clogged rolls, cause undue wear on both the belt and idler, and put an extra load on the driving mechanism.

5. TRAINING THE BELT. Train the belt while empty, then if it runs out of line when loaded it is because of unequal loading. Fix the loading chute or install a feeder. Adjustment cannot be made by taking up the take-ups on one side or the other. See that the belt contacts the center roll of the idler because this roll steers the belt. Foundations for the idler should be firm and secure. Side, or guide idlers, should not be used when training the belt. Do not increase belt tension as this will injure the belt without obtaining the desired results.

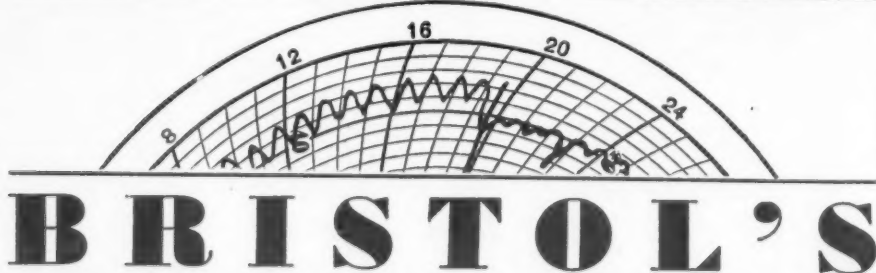


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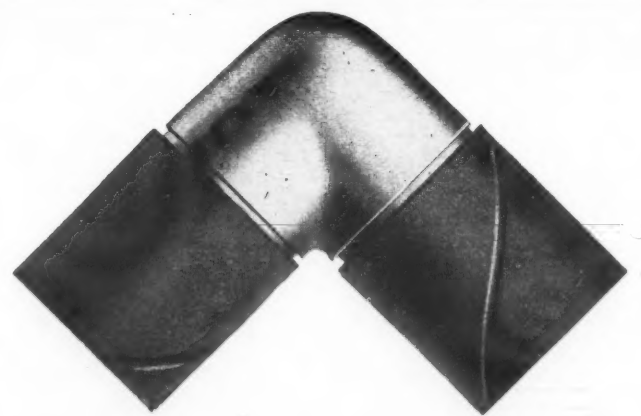
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LATEST REFRIGERATION PATENTS

ISSUED APRIL 21

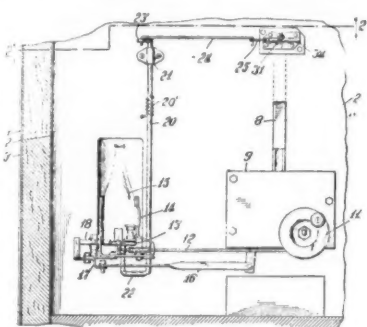
1,801,371. AUTOMATIC TEMPERATURE-CONTROLLED REFRIGERATING SYSTEM. Earl E. Snader, Waynesboro, Pa. Filed March 13, 1929. Serial No. 346,600. 2 Claims. (Cl. 62-3.)

1. An automatic refrigeration system comprising condensing mechanism, a refrigerant feed line, an expansion coil having inlet and outlet connections in continuous unobstructed communication with the feed line, an automatic temperature controlled valve interposed in said feed line between and independent of the inlet and outlet connections of said expansion coil to the feed line.

1,801,395. PUMP FOR REFRIGERATING APPARATUS. Otto M. Summers, Dayton, Ohio, assignor to Frigidaire Corp., Dayton, Ohio, a Corporation of Delaware. Filed April 30, 1928. Serial No. 274,086. 2 Claims. (Cl. 230-184.)

1. In a compressor for refrigerants, in combination, a sheet metal housing adapted to form a crank case portion and a cylinder supporting portion, a cast metal cylinder secured to said last mentioned portion, a shaft projecting into said crank case portion, bearings for said shaft secured to said sheet metal housing and a piston in said cylinder, said piston being operatively connected to said shaft.

1,801,409. DISPENSING MACHINE. William E. Bihl and Axel Ramclaw, Chicago, Ill., assignors to Zerozone Corp., Chicago, Ill., a Corporation of Illinois. Filed Jan. 22, 1930. Serial No. 422,512. 9 Claims. (Cl. 194-1.)



1,801,409

1. In a dispensing machine, a coin slot, a chute communicating therewith, a coin return receptacle, said chute extending through said receptacle and having a slotted side opening into it, means controlled by the movement of a coin through said chute for dispensing articles from said machine, a lever moved by the movement of said dispensing means as it dispenses the last article from the machine, and means mechanically operated by the movement of said lever for blocking said chute to thereby cause additional coins deposited in said coin slot to fall into said receptacle.

1,801,417. REFRIGERATING APPARATUS. Robert E. Eisenlohr, Dayton, Ohio, assignor to Frigidaire Corp., Dayton, Ohio, a Corporation of Delaware. Filed Nov. 30, 1929. Serial No. 410,764. 3 Claims. (Cl. 62-89.)

1. A refrigerating element for refrigerating apparatus comprising in combination a freezing enclosure adapted to receive ice-making containers, at least two shelves in said enclosure spaced from one another, a supporting strip extending from one shelf to the other, a front panel for said element having an opening therein for access to said shelves and a strip across said opening adapted to clamp said front panel in position.

1,801,506. APPARATUS FOR FILTERING AND TREATING AIR. Walter Jenks, London, England. Filed Jan. 7, 1929. Serial No. 330,943, and in Great Britain, Jan. 24, 1928. 9 Claims. (Cl. 183-37.)

1. An apparatus for filtering and treating air, the combination of an air conduit having an inlet and an outlet opening, a motor and a centrifugal impeller driven thereby both arranged adjacent to and outside the outlet end of said conduit for sucking air therethrough, and a deflecting plate secured to the outlet end of the conduit, which plate extends upwardly and outwardly away from the lower edge of said impeller for the purpose described.

1,801,525. INSULATING UNIT. William E. Nelson, Minneapolis, Minn. Filed Sept. 24, 1927. Serial No. 221,771. 3 Claims. (Cl. 154-44.)

1. An insulating unit comprising a plurality of separate, substantially flat, preferably fibrous sheets arranged in superposed and engaging relation, water-proof caps fitted over the ends of said fibrous sheets to bind them together and to protect said ends from moisture, and a coating of water-proof material applied about the full length of the perimeter of the superposed sheets of said unit between said water-proof caps and in overlapping and sealing relation with said caps.

1,801,536. SODA-FOUNTAIN-REFRIGERATOR INSTALLATION. Robert L. Alexander and Harold W. Wishart, Clinton, Iowa, assignors to Climax Engineering Co.,

Clinton, Iowa, a Corporation of Delaware. Filed June 10, 1927. Serial No. 197,796. 4 Claims. (Cl. 62-6.)

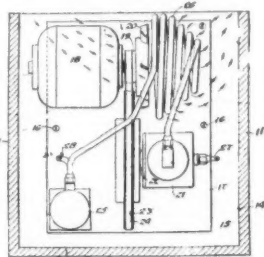
1. A soda fountain refrigerator installation comprising a refrigerant system having a supply pipe and a return pipe, an ice cream cooling coil, an intermediate pipe, and a secondary ice cream cooling coil connected in series in said refrigerant supply system, a water cooling compartment having a water cooling coil connected between said intermediate pipe and said return pipe, a water temperature control valve connected with said water cooling coil, and a thermostat bulb located in said water cooling compartment and connected with said control valve to govern the operation thereof to control the flow of a refrigerant from said intermediate pipe through said water cooling coil by means of the effect of the water temperature on an expansible gas in the thermostat bulb.

1,801,560. DIAPHRAGM ASSEMBLY. Geo. A. Knaak, Milwaukee, Wis., assignor, by mesne assignments, to Penn Electric Switch Co., Des Moines, Iowa, a Corporation of Iowa. Filed June 20, 1928. Serial No. 287,025. 8 Claims. (Cl. 137-157.)

1. A diaphragm assembly structure comprising a funnel shaped plate having an out-turned peripheral flange and a circumferential groove adjacent the flange, a retaining ring having a rib adapted to register with said groove, a diaphragm element interposed between a portion of said plate and said ring and received with said flange, said rib on the ring wedging the diaphragm element into said groove and means on said ring for engaging and piercing said element near its periphery and forcing it against the inner surface of said flange as and for the purposes stated.

1,801,563. REFRIGERATING APPARATUS. Glenn Muffly, Detroit, Mich., assignor to Copeland Products, Inc., a Corporation of Michigan. Filed Nov. 12, 1927. Serial No. 232,726. 4 Claims. (Cl. 62-116.)

1. In combination, a refrigerator cabinet, a chamber formed therein having imperforate front and side walls and an open back, a fan positioned within said chamber adjacent said open back with its axis parallel to the rear face of said cabinet, and



1,801,563

an un baffled condenser having a projected area approximately equal to that of said fan, mounted within said chamber in a position to receive the flow of air caused by rotation of said fan.

1,801,564. REFRIGERATOR CABINET. Glenn Muffly, Richmond, Mich., assignor to Copeland Products, Inc., a Corporation of Michigan. Original application filed July 20, 1929. Serial No. 379,655. Divided and this application filed May 19, 1930. Serial No. 453,435. 10 Claims. (Cl. 220-9.)

1. A gasket comprising a base portion having an aperture therethrough for receiving a headed fastening member, a spaced bead portion overlying said base portion having a recess therein registering with said aperture for receiving the head of said fastening member, said base portion being connected to said bead portion at one edge only by a resilient connecting neck.

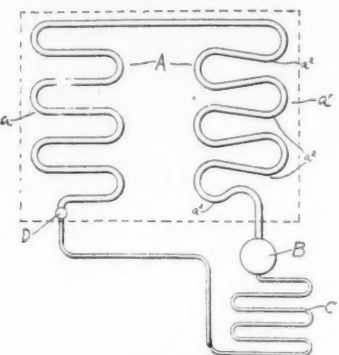
1,801,565. HUMIDIFIER. Edward D. Norton, Minneapolis, Minn. Filed Feb. 23, 1929. Serial No. 342,088. 8 Claims. (Cl. 261-30.)

1. In a humidifier, a flue provided with an offset leg communicating substantially tangentially with said flue, a source of water supply within said leg, and means for setting up a circulation of air through said flue, whereby said tangential communication of said leg with said flue will produce a swirling motion on said air in its passage through said flue.

1,801,625. CHARGING REFRIGERATING SYSTEM. Ransom W. Davenport, Detroit, Mich., assignor to Chicago Pneumatic Tool Co., New York, N. Y., a Corporation of New Jersey. Filed Feb. 4, 1928. Serial No. 251,800. 6 Claims. (Cl. 62-178.)

4. The method of charging refrigerating systems of the evaporator-compressor-condenser type having an evaporator of the riser and downcomer type and utilizing mutually soluble lubricating and refrigerating fluids which are alternately concentrated

and diluted in the high and low pressure parts of the system, respectively, which comprises putting a charge of lubricant fluid in the compressor and a charge of refrigerating fluid in the evaporator, operating the system and subjecting it to the maxi-



1,801,625

mum enviroing temperature, and adjusting the quantity of refrigerating fluid in the system until the connection from the downcomer of the evaporator to the compressor is only slightly cool.

1,801,693. HEAT EXCHANGER. Alonzo W. Ruff, York, Pa., assignor to York Ice Machinery Corp., York, Pa., a Corporation of Delaware. Filed Aug. 23, 1929. Serial No. 387,997. 4 Claims. (Cl. 257-199.)

4. A combined trickler and insertion cooler for use in milk cans and like receptacles, comprising a hollow-walled tubular element, open at both ends, and adapted for insertion into a receptacle; means within the hollow walls of said element defining a flow path from end to end of the element; means for supporting said element in an upright position within a receptacle, and adapted to permit flow of the contents of the receptacle beneath the lower end of the tubular element; means at the upper end of said element for conducting liquid to and from the hollow interior thereof; and a distributor removably mounted on the upper end of said tubular element, and adapted to direct liquid over the internal and external faces of the tubular element as the liquid is being poured into the receptacle.

1,801,705. COMPRESSOR STRUCTURE. Frank R. West, Detroit, Mich., assignor to Rice Products, Inc., Detroit, Mich., a Corporation of Michigan. Filed Sept. 16, 1926. Serial No. 135,799. 7 Claims. (Cl. 230-208.)

1. An integral cylinder block comprising an annular chamber to provide gas cooling of the upper part thereof, and fins for air cooling of the lower part.

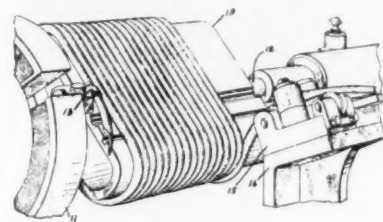
1,802,093. VALVE. Franklin G. Slagel, Buffalo, N. Y., assignor to Fedders Mfg. Co., Inc., Buffalo, N. Y., a Corporation of New York. Filed April 1, 1929. Serial No. 351,808. 2 Claims. (Cl. 251-47.)

1. A valve comprising a casing having a valve chamber, an inlet, an outlet, a valve seat at one end between said inlet and outlet, an internal longitudinal guide groove, and an outwardly facing shoulder at its opposite end, a cover having a screw connection with said casing and facing said shoulder on the casing, a supporting ring having a flange arranged between said shoulder and cover, a valve closure movable toward and from said seat, a bellows diaphragm connecting said valve closure and supporting ring, means for actuating said valve closure, including an adjusting sleeve having a screw connection with said valve closure and provided with a flange arranged between said supporting ring and cover, and a guide pin arranged on said valve closure and slidable lengthwise in said groove.

1,802,161. METHOD OF AND APPARATUS FOR FORMING COILS. Otto M. Summers, Dayton, Ohio, assignor, by mesne assignments, to Frigidaire Corp., a Corporation of Delaware. Filed Nov. 6, 1926. Serial No. 146,780. 23 Claims. (Cl. 153-67.)

1. The method of causing a tube to lie

straight against a plane surface which comprises giving the tube a curve convex to



1,802,161

the plane and then straightening the tube against the plane while stretching the tube lengthwise.

5. Apparatus for winding coils comprising in combination, means for flattening stock, a forming device and a guide between said means and device for holding flat stock coming from the flattening means edgewise on the forming device.

1,802,190. ICE-CUBE-FORMING ASSEMBLY. Harry Wardman, Washington, D. C. Filed Oct. 22, 1929. Serial No. 401,449. 4 Claims. (Cl. 62-108.5.)

1. An improvement in an ice cube-forming assembly embodying a shallow pan and a removable frame therein having partitions defining cube-forming cells open at both their upper and lower ends, said improvement consisting in said partitions being formed of gradually increasing thickness toward their upper edges to provide cells of larger size at their lower than at their upper ends.

DESIGNS

83,999. WATER COOLER. Victor T. Schmitt, Chicago, Ill., assignor to Hinckley & Schmitt, Chicago, Ill., a Corporation of Illinois. Filed April 15, 1929. Serial No. 30,894. Term of patent, 3 1/2 years.

JAMES A. FARRELL TO TALK OVER N.B.C. RADIO CHAIN

EAST PITTSBURGH—James A. Farrell, president of the United States Steel Corp. and chairman of the National Foreign Trade council, will give a radio address on international trade conditions over the NBC network at 9:45 p. m. Sunday night, May 24. The program has been arranged by the Westinghouse Electric & Manufacturing Co. in connection with the Foreign Trade Convention which will be open in New York City at that time.

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NEW YORK CITY—The Commercial Engineering Co., of Washington, D. C., has been named sales agent in that district for the Roller-Smith Co., according to an announcement from the main office here. The Commercial Engineering Co. will handle Roller-Smith measuring instruments, circuit-breakers, relays and control panels.

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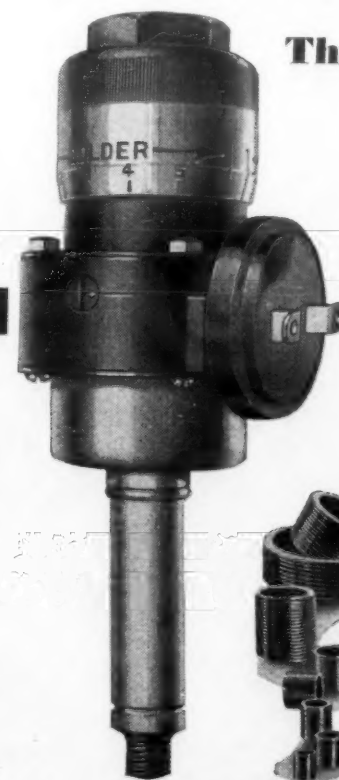
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